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Bulletin 50 March 1902

HORN AND BONE IMPLEMENTS

OF THE

NEW YORK INDIANS

BY WILLIAM M. BEAUCHAMP S.T.D.

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HORN AND BONE IMPLEMENTS
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PREFACE

It was expected that corrections and additions relating to the matter of these bulletins would be made from time to time, as these publications were intended to impart knowledge and call forth more. Among other traces of aboriginal occupation I have thus recently learned of camp sites extending some miles east of Pulaski, on the higher lands along the Salmon river. These were to be expected there, and they have the usual early relics. In the vicinity of New York, M. Raymond Harrington has successfully explored a number of rock shelters in Westchester county, and at Port Washington on Long Island he opened about 100 pits containing human and canine remains. I have also observed and located 50 of the Perch river mounds, to be described later. They are the same type as those of the Bay of Quinté. A trip to the Susquehanna in the summer of 1901 allowed a brief examination of the great shell heaps of Unio complanatus there, and secured a plan of Spanish hill. Some new sites have been examined there and elsewhere at my own expense.

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S. L. Frey properly corrects an error of names. There was a large recent site at Fort Plain; but the Canajoharie of Johnson's day was at Indian Castle, Herkimer co. Names of villages often followed them in removals. Mr Frey also agrees with Gen. Clark in placing *Andagoron* half way between Sprakers and Auriesville.

He greatly deplores the fact that so many small yet valuable collections are being bought up and taken from the state. I hope that contemplated field work may soon increase our knowledge of town and camp sites. My thanks are due to many who have invited me to share in their explorations.

There are some things to add to what has been said of articles of polished stone. Mention has been made in a preceding bulletin of a fine, perforated stone ball, having a surface groove parallel to the perforation. This is from Genesee county and belongs to the state museum. I have since seen another fine example, found in Chautauqua county. To these may now be added a similar, but rarer form, heretofore reported only in Ohio. It is a flattened ball of polished gneiss, the short diameter being 1⅝ inches, and the long 2⅛ inches. The perforation is through the short diameter, and parallel to this, the surface is flattened, nearly a third of the long diameter being removed. It was found about 50 years ago in Marshall, Oneida co.

The long, slender and often double-pointed celts may now be assigned to the 16th century and the Iroquois, examples having been found on the Christopher site in Pompey. The flattened and constricted stone pipes, most nearly represented among the articles of polished stone by fig. 112, are now conclusively proved to belong to the 17th century, as before asserted. One with a perforated base was recently found in a grave at Brewerton, associated with European articles.

Visits to various sites and collections have added much to a knowledge of New York earthenware. Jefferson county is rich in pottery of bold designs, and vessels with handles and projecting beaks occur there. Excavation shows many new patterns and features. On Chaumont bay I dug up a little of the curious pottery which is partly ornamented by making an incision within, producing a small circular boss on the outside by pressure. This is not common even there. Some of the vessels have a bright look, caused by mixing a quantity of yellow mica with the clay. This is occasional elsewhere. In that county I have observed small rude faces on some clay vessels, and a rude attempt at a nose in connection with the three conventional circles.

In the bulletin on earthenware fig. 124 is of a vessel having a point in the center of the base. Thus it was figured and expressly described in a New York paper. W. L. Calver doubted the correctness of the statement, but could not at the moment obtain full access to the vessels. He has now changed his opinion. In a letter to me, dated Ap. 26, 1901, he says that a friend, in digging at Port Washington, "got a whole pot which had a pointed base." This form will therefore now hold the place claimed for it. I may add that the pointed base of a broken vessel has also been found in Jefferson county.

In treating of wampum, I regret not mentioning Horatio Hale's *Four Huron wampum records*, published with notes by Prof. E. B. Tylor of Oxford Eng. in 1897. I have not seen it; but one belt, in his opinion, showed an alliance between four nations, represented by squares. An older broken belt had a central diamond, so frequently used. This is "between a bird and a quadruped and three crosses with a circle (diamond) uniting their branches." These are all recent symbols. I merely call attention to these belts now, as doubtful opinions have been founded on them. Some fine ceremonial wampum has recently come into my hands, one call for a religious council still having the tally-stick attached. Mr Wyman also obtained some fine Ottawa belts in the spring of 1901, and the following summer Mrs Converse secured a large Canadian belt for one of her friends. I secured descriptions of all.

Mention may also be made of two fine belts belonging to the Douw family of Poughkeepsie N. Y. One is 2 feet long, 3 inches wide and has nine rows of white beads, crossed by four double diagonal lines of dark beads. This was a condolence belt, given by the Indians to Volckert Pieter Douw, on the death of his daughter in 1775. That year Mr Douw was a commissioner to treat with the Six Nations, and they returned one belt which he presented. I think this the second belt. It is on twine, has 10 rows, is 2 feet long and 3½ inches wide, and has three central designs in dark wampum. I made a satisfactory reading of both, but this is conjectural.

W. M. Beauchamp

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HORN AND BONE IMPLEMENTS

Introduction

It is not usual to place implements of horn and bone among those first used by man; and yet there is no reason why they might not then have been common. Nothing should be inferred from their absence; for, while the harder articles of stone seem almost imperishable, those of bone soon decay, except under favorable conditions. They appear in the bone caves of France with early implements; and in Kent's cavern, England, elegant bone articles are found below the stalagmite. The artistic engravings on some of the early bone implements of France have a wonderfully modern look to the well trained eye, in spite of their well attested origin. All these were preserved under favoring circumstances. Those left unprotected quickly disappeared. Bearing this in mind, we can see that a sharp bone was as suggestive of use as a sharp stone to the primitive man, and the same remark applies to implements made of wood. The fact has been strangely overlooked, that thorns are natural awls and needles, and that hard wood knots preceded the stone-headed war club, that pointed sticks were the first fish spears, and that arrows, made entirely of wood were and still are used by some Indians of this land. The early tomahawk was but a hard wood club. A wood or bone age may thus even have preceded that of stone, leaving few or no memorials. They certainly coexisted.

In Evans's *Ancient stone implements, weapons and ornaments of Great Britain* are figures of Eskimo arrow flakers, with handles of fossil ivory and points of reindeer bone. In such cases bone preceded the stone which it formed into shape. Perforated tablets of bone, resembling American gorgets, had been found in Europe. Bone pins and needles were frequent, but this requires qualification. The pins represented would be called awls in America, and have no heads. Some needles have central perforations and double points, as with us, but others have terminal perforations in slightly expanded heads. Bone was used in England for chisels, beads and buttons; horn for axes, hammers, pickaxes, hoes and handles. In this work a figure is given of a bone harpoon from Kent's cave, which has barbs on both sides, but with a point differing from those of New York. The *Epoch of the mammoth*, by James C. Southall, shows a horn harpoon from Switzerland precisely like some from Onondaga county.

25 years ago it was a notable fact that most of the bone and horn implements in the Smithsonian institution were from the Pacific coast, and perhaps the majority are still. Few were known from New York and New England, where their historic use is well attested. Little had been done in systematic excavation, and most articles at hand were surface finds of stone. A change has taken place; and the last 10 years have added wonderfully to our knowledge of implements of bone and horn. Comparatively little has been done in the Algonquin fields of the eastern counties of New York, but many an Iroquois site has yielded large quantities of these. Usually they were too low in the ground to be reached by the plow, lying in the refuse heaps or the deep ash pits of early villages, but coming forth as bright and unimpaired as when lost centuries ago. What they were will appear as we proceed.

When Verazzano visited Long Island in 1524, as many suppose, he found the Indians using fish bones for arrowheads, but farther west they had those of stone. In 1620 arrows were used against the whites at Nantasket creek, Mass., tipped with brass, eagle claws and horn. In the first volume of the Massachusetts historical society's collections is an account of *New England's plantations*, written in 1629 by Rev. Mr Higgeson. He said: ' For their weapons they have bowes and arrowes, some of them, headed with bone, and some with brasse." Capt. John Smith said of the Virginia Indians: "Their hookes are either a bone, grated as they noch their arrows, in the forme of a crooked pinne or fish-hooke, or of the splinter of a bone tyed to the clift of a little sticke, and with the end of the line they tie on the bait." Loskiel mentions hoes made of the shoulder blade of the deer, and other quotations might be given.

In a letter to the writer in 1880, Prof. George H. Perkins of Burlington university, Vt., said: "We have no implements of bone in Vermont, but from the other side of the lake are some split bones that may have been used as awls, and one very fine barbed spear point." This was a harpoon, barbed on both sides. At a later day Prof. Perkins found a fine but modern bone mask in Vermont. Large village sites are rare in that state, but excavations might reveal something. Bone awls appear in some Illinois mounds, but do not differ from eastern forms. Bone articles found at Hochelaga (Montreal) are precisely like those of New York and those of the old Huron country, near Georgian bay, are similar. Rarer forms have been obtained from the curious mounds about the Bay of Quinté. A one-sided harpoon from Manitoba is of a common New York type. Bone articles are rarer in Pennsylvania, perhaps through lack of excavation, nor are they common near the seacoast, where many things supply their place.

As most of the early visitors to New York were migrants, stopping but a few days or weeks in a place, the absence of bone implements on their camp sites is no proof that they had none. Destruction came in many ways. James E. De Kay, in his *Zoology of New York*, says, in speaking of the common deer:

> It has often been a matter of surprise that, while so many horns are annually cast, so few are ever found. This is to be explained by the fact that, as soon as they are shed, they are eaten up by the smaller gnawing animals. I have repeatedly found them half gnawed up by the various kinds of field mice, so numerous in our forests.

It may be added that a friend recently found that mice had gained access to his bone articles and badly gnawed some which were centuries old. Besides this, mere camps did not produce sufficient ashes or carbonaceous matter to preserve perishable articles, while those of stone remained. They are not frequent in graves, but must be sought where fires have been long in use. The dumping places, bordering most Iroquois villages, yield many and some which are fine. Nothing preserves them so well as ashes, and these accumulated to a great depth where a fire burned for many years. In some circular lodges the floor was occasionally cleansed by drawing all accumulations to the edge of the lodge, and filling the center with fresh earth or gravel. This produced hut rings, and relics are to be expected near the border, not in the center. Where a village was edged with deep ravines, refuse was thrown down the banks, but sometimes a deep hole was found or formed and gradually filled. These have rich deposits.

The Iroquois had no regard for bones as sacred, but Canadian Indians venerated many, or at least were careful of them. Some would not eat the marrow of the backbone, this being bad for the back. The Jesuits said the Hurons considered "fish intelligent, and also the deer and elks." It is added: "This is why they do not throw the bones of the latter to the dogs, when they are hunting, or the fish bones of the former when they are fishing. Otherwise, upon the warning that the others would have of it, they would hide and not allow themselves to be taken." Some Algonquins gave their dogs no bones of beavers, female porcupines, or birds taken in snares, for the same reason, but burned them. It was best to throw the bones of a snared beaver into the river. All were collected with care. Bears bones were burned or buried under the hearth. Some Algonquins burned dry beaver bones to learn the source of pestilence.

The Iroquois were not fond of working in stone, though they did this well, but long maintained their liking for bone and horn. Occasionally they neatly carve such material yet. Some of their early articles have preserved that wonderful polish, which sometimes creates doubts in those who have not dug up such articles, as the writer himself has done. They are usually plain, but early decoration sometimes occurs. The smoothness of the work is often surprising, and the luster may have come from the absorption of fat. The relative abundance of bone articles on early Iroquois sites is another subject worthy of remark, but this appears only through excavation. On many of those over 300 years old more tools or ornaments of bone than of stone will be found; nor is this proportion confined to those of established age and origin. The writer and four others did a successful day's digging at an early fishing village in Jefferson county, and he found the only flint arrowhead which was secured. Nearly all the other relics were fragments of pottery and pipes, and various forms of polished bone. Another prolific village site in Onondaga county has a similar character, chipped stone implements being exceptional, and those of bone the rule. Yet fine triangular arrowheads and small basalt celts have recently been found there, but bone is more frequent.

While occasional examples in Europe might pass for those of

America, by far the larger part are distinct in appearance. References will be made to some for comparison. In North America a division of districts might be made, but there is much uniformity of type in common articles. A bone awl from a cliff dweller's home may be in no way distinguishable from one made in New York. Village sites are the best places for determining the age and relations of bone articles. At fishing places, frequented by many visitors of different periods and families, the numerous and fine remains of this kind rarely permit any orderly sequence to be assigned them.

It will be noticed that a large proportion of the bone articles here figured are from the central part of New York, the home of the Iroquois One reason for this is that the writer's own work has been mainly there, but a more important one is that this region is nowhere equaled in articles of this kind. Visits were made to some other places, and correspondence was had with good antiquarians, to see what additional matter could be secured. Moderate results were obtained, and some of interest, but all pointed to the fact that the early and late Iroquois, with their kindred, were the workers in bone *par excellence.* As these had some early hold on Lake Champlain, though no forts or towns, it was to be expected that something would be found there. The small and briefly occupied sites did not, however, produce sufficient preservative material for large results. A letter from Dr D. S. Kellogg of Plattsburg states the case there:

> I don't know that I can add much to my *bony matter.* The most I have found was in fire heaps; among charcoal, ashes, fire stones, flint implements, celts and fragments of pottery. There are many awls or needles, and some very fine fragments of notched harpoons. The bones and teeth of different animals are quite numerous, and mostly broken. Deer horns are often found, and some of the tines look as if they had been used as punches.

A long resident population, large villages, and perhaps unusual skill, made the Iroquois home territory a treasure house of the articles now to be considered. They are abundant, fine, and in general remarkably well preserved.

Besides those authors more explicitly quoted in the following pages, reference may be made to some writers in the way of general distribution. Dr Henry Schliemann's *Ilios* has bone needles with perforated heads, and small awls differing from those of New York, but some bone knives and large awls resemble ours. The Irish implements are quite different. In the *Lake dwellings of Switzerland*, Dr Keller figures a large awl much like some in New York. The needles shown are perforated at the end, but fig. 35 of plate 103 is suggestive of America, as well as a harpoon on that plate. Plates 5 and 20 also have harpoons resembling those of New York. In the *Antiquities of the southern Indians*, Mr Jones figures some of the frequent bone gouges, but they differ from the few found here. Prof. T. H. Lewis of St Paul Minn. has found the blunt bone implements here called punches; and his descriptions of awls and harpoons are like those farther east. A bone fishhook has been found in Illinois. In general the whole territory from the upper Mississippi eastward to New York and the ocean may be considered one district with local variations.

Awls and knives

It is quite probable that many small bone articles commonly called awls were really used as arrow points, and some have regarded the large and sometimes massive forms as daggers. In the paucity of stone arrowheads and knives on many Iroquois sites of the 16th century, such uses seem reasonable, and have much to support them in the notes of early discoverers. No special classification of these pointed tools will be attempted here, but the reader will see that some would have been very effective as warlike weapons. This would appear more clearly if all could be represented here in actual size. A few are reduced for illustration, and many of the large forms are omitted because just as well shown by smaller examples. Frequent small awls are also found which are but sharpened splinters of bone, as well described by words as figures. The outline of the tool often means nothing. The point of the awl is the only essential thing. In considering the better finished articles of all kinds, it is to be remembered that these are but a selection of typical forms out of thousands which have individuality, constantly varying in one way or another.

Then there are forms which have a rounded point, not adapted for piercing or any other known purpose. These are usually of horn, and are commonly classed with awls, though often termed punches. It may be best to assign them this name here, though this places them with cylindric articles usually having rounded ends. While they differ much in form from these, they seem to belong nowhere else; and even then we do not know their use.

While a warlike character has been contended for in the case of some of the larger and longer forms, some persons have seen in the more slender examples pins, either for the hair or apparel. The latter supposition is questionable in most cases; and those of great length and sharpness would have been neither comfortably nor safely worn in the hair. Some may be assigned to this use. Many combine a broad, knifelike form with the sharp point of an awl, if such they are. They seem not sharp enough for cutting, but would have been useful in skinning any animal. Among the Iroquois stone axes or celts were not abundant, and were probably prized. For deerskinning the bone knife did just as well. It was lighter, more easily made, was sometimes distinct, but often combined the awl point with it, as our pocket knives practically do.

While the so called awls were often made of small splinters of bone, the larger ones often left some natural feature almost untouched. The jawbone of some animal would be sharpened, the teeth perhaps being still in place, but this is rare. Long awls quite commonly leave one joint almost unaltered. This is a frequent feature of smaller forms. The bills of water birds were often utilized, and fish spines required but moderate change, some none at all. Most of these will be illustrated here, but the diversity of form is endless.

We need not raise the question whether the sharpened splinter, requiring a handle, or the larger implement requiring none, had priority in time. Here they coexist, but it may be advantageous to treat them separately, as far as it can be done. Yet many large awls are formed from splinters, and small ones occur with one joint, almost or quite unaltered. Another evident distinction will be found between flat and cylindric awls, and between these and the frequent and fine three-sided forms. These distinctions are convenient in description, but have no other value. The maker simply fashioned the awl according to the original form of the bone. There are a few exceptions to this. Little need be said in regard to the mode of forming awls, so simple was the process. Examples will be given of the progressive stages of less common implements. The smaller awls may be described first.

Fig. 1 is a very sharp implement, and much thicker than most of this size. The broad end is neatly finished, and near that end there is a distinct groove on the convex side. This may have secured it more firmly to a handle. It is not as much rounded as most of its class, but has well defined angles. It comes from the fort west of Cazenovia, and is about 300 years old. On that site many bone implements have been found. Fig. 2 is from the same place, and was found by the writer. It is both sharp and slender, and the notch on one side may also have been for attachment. The longitudinal groove is natural, and the base is unfinished, as in most examples of this kind.

Fig. 6 is a curved awl, quite slender and nearly cylindric. The base is rounded and has four grooves. From its finish and ornamental character, it may have been a hairpin. It is from a prehistoric site in Pompey.

Fig. 10 was in Dr. Hinsdale's collection, and was found by him on the site last mentioned. This was a considerable town on a hill in Pompey, where many beautiful articles of bone and horn have been discovered in the ashes. It is a short and not very thick bone, flat on one side and a little rounded on the other. Both ends come to a sharp point. It may be said here that all the figures are of actual size unless otherwise noted, and that all articles are of bone when not described as horn. The latter are comparatively few in proportion. Fig. 11 is from the same place, and is a fine flat bone, sharp and highly polished. The base is neatly indented. Fig. 22 was found near it, and is a good representative of a large class where some original outline of the bone remains. Jaws of animals are often worked merely to a sharp point, and the beaks of birds are naturally ready for use.

Fig. 23 is from the fort west of Cazenovia, usually placed at the end of the 16th century. It is a narrow cylindric and tubular bone, smoothly cut at one end and beveled at the other. It is a frequent form, and some have thought it a primitive arrow point.

Fig. 24 is from the prehistoric town in Pompey, already mentioned, and known to local collectors as the Christopher site. By this name it will be designated in further descriptions. It may be a flat awl, but the form and side notches would be appropriate for an arrowhead. The base is neatly rounded, and it may have been an ornament. This would explain its high polish, which would hardly be expected were it simply the point of an arrow.

Fig. 25 is a handsome awl from the fort west of Cazenovia, locally known and hereafter designated as the Atwell site. It is thin and sharp. The under side is concave, retaining this natural feature. The upper is flat and a little angular. Fig. 27 is a very small cylindric awl, with a rounded base, found by Dr Hinsdale at Brewerton. Many of Dr Hinsdale's articles are now in the state museum. Several examples of this kind are known, but it is not a frequent form. They are usually larger.

Fig. 45 might be classed with awls, but the angular and grooved projection at the base suggests its use as a pick. The pointed portion is cylindric. This is from the Christopher site.

Fig. 49 is another of the double-pointed, flat awls. It is quite thick and a very fine specimen of this form. It was found by Dr A. A. Getman in the vicinity of Chaumont bay, Jefferson co., where bone and horn relics abound. Fig. 67 presents a similar outline, but is slightly gougelike at one end. It is of moderate thickness and quite white. It was found by Luke Fitch of Pompey, on the Christopher site, and is now in the Bigelow collection at Baldwinsville, with many others from that spot. Bone articles there have been finely preserved in ashes.

Fig. 69 is from Dr Getman's collection. His many fine articles are from several sites in the vicinity of Chaumont bay, but several miles apart. This fine and sharp awl is nearly flat on one side, but rounded on the other. One edge is also broadly angular, and the other curved.

Fig. 71 was found by Dr William G. Hinsdale of Syracuse, on the Sheldon fort site, lot 69, Pompey. This may have been occupied about 1630, and has many European articles. It is a sharp implement of deer horn, cylindric toward the point and somewhat flattened near the base. This is neatly rounded, and there is an indentation on each side above. For a considerable time Dr Hinsdale made a specialty of bone and horn implements, and was very successful in collecting them on early sites.

Fig. 76 is a very slender and curved awl, with a sharp point and a neatly rounded base. It is polished all over, and much more curved than usual. This was found by Oren Pomeroy near Chaumont bay. He has many fine articles of bone and horn. Fig. 74 is a very slender bone awl from Pompey. The form is not rare.

Fig. 80 is in the collection of the Buffalo academy of science, and was found in or near that city. It is worked all over, and at first suggests an unfinished hook. The two sharp points would be unnecessary in that case, but it might have been attached to a wooden shank and used in this way. On the other hand, the longitudinal grooves favor the idea that the ultimate intention was to cut it in two, thus making two small awls. The article is unique in its present form.

Fig. 81 is a fine and flat awl found by the writer at the mouth of Perch river, Jefferson co., in 1899. It is moderately curved. The site is an early one, and yields much in pottery, bone and horn, and but little in stone. Fig. 82 is from the same county but not the same place. The double points suggest an awl, but are not very sharp. It may have been a pin. The indented center also suggests another use, that of a fishing implement made by some primitive peoples, but more cylindric than this. In that the line was attached to the center, the bone brought parallel to the line and covered with the bait. When this was swallowed, a jerk brought the implement across the throat, and secured the fish. The Eskimos use these for catching waterfowl. Dr Getman has the center of a similar article more angularly indented.

Fig. 104 is a flat, triangular and perforated piece of bone, of small size and sharp at both ends. It may have been used in several ways, as an awl, an arrowhead, or the point of a fishhook. It is from the Atwell fort, and is in the collection of J. H. T. E. Burr of Cazenovia, who has many interesting articles from this site.

Fig. 121 might be called a needle but for its size. The form is generally triangular, but the point and base are rounded, the latter having three notches. It is quite flat and has an elliptic perforation near the base. It is from Jefferson county. Fig. 125 is similar and from the same county, but differs in having a sharp point, a higher and circular perforation, and no basal notches. Fig. 127 is another perforated awl or needle, sharp at both ends, and having a central perforation. It is generally flat, but somewhat undulating in form, and may have been used in fishing, though rather large for this. It came from the fort south of Pompey Center, occupied about 1640. Fig. 122 is much like this, but shorter and broader. This fine article is nearly flat, and a little rounded on the upper side. The reverse is slightly concave, and both sides are polished. This is from the earlier and prehistoric Christopher site, and is now in O. M. Bigelow's collection at Baldwinsville. Fig. 261 is in the same collection, and is a very fine bone awl from the Seneca river north of Weedsport. It is somewhat angular, and the points at each end are rounded. The color is dark brown, and it was probably colored and preserved by iron in the soil. Fig. 271 is a half round and slender bone awl from the Atwell fort. It is worked all over and pointed at both ends. It is a fine and not very rare form, having one slender and one obtuse point. Fig. 275 is from the same place, and is a little wider, and with a more obtuse basal point.

Fig. 302 is a unique form, curved, and having four notches on each side near the rounded base. It may have been used as a hairpin or for ornament, and is quite slender. This was found by Dr R. W. Amidon of New York city, at Point Peninsula in Jefferson county. While summering on Chaumont bay, he has done much valuable work and collected many fine articles. Fig. 315 is from the same collection, and was found in the vicinity of Chaumont bay. It is a small and flat implement, one end being pointed, and the other rounded and nearly like a chisel. Fig. 317 is also from the same collection, but is a frequent form on many sites, usually but slightly worked. It appears among European articles and is a bird bone.

These figures sufficiently represent the smaller forms of what are commonly called awls, but a few others may be mentioned. In later days the iron point replaced that of bone, and Aunt Dinah, the aged Onondaga squaw, had an iron awl with a cylindric handle of curved bone, 3½ inches long. This had transverse grooves, and much resembled some early bone beads. A fine and slender bone awl comes from a site near Munnsville. Most of the relics there are of the historic period. In the Richmond collection is a nice awl from a burial mound (?) at Mannsville, Jefferson co., which is 3 inches long, and in the same collection is a curious flattened one of the same length. This is curved, having a single convex curve on one side, and two concave curves on the other. This comes from Madison county. Many fine and sharp awls have been found by Dr Hinsdale on what is called the *Kaneenda* site, north of Syracuse. Many also occur on the mixed sites at Brewerton. Dr Hinsdale also collected slender and flat awls on the Sheldon site, lot 69, Pompey. Among those from Brewerton is a fine double-pointed horn awl, 4½ inches long, and another of the same material, very slender and a little curved, not unlike a dentalium shell in outline. This is 1½ inches long. Another of bone is 2 inches long, curved, polished and very slender.

Fig. 44 is a sharpened fish spine from Brewerton. These are frequent and of many sizes. Fig. 70 was made from the bill of a sheldrake, and is from the Atwell site and in the L. W. Ledyard collection. These also are frequent, with the bills of other birds.

Among the larger awls, as we may call them for the sake of a name, many of the same forms appear, often grading into those which might be differently classed. Some which have a distinctly narrowed and sharpened point, have also broad blades suggestive of knives. Another use is even more probable. In the *League of the Iroquois*, p. 363, L. H. Morgan illustrates the "*gä-ne-u'-ga-o-dus-ha*, or deer horn war club." After describing the common club of hard wood, he says of the one just named:

> This species of war club was also much used. It was made of hard wood, elaborately carved, painted and ornamented with feathers at the ends. In the lower edge, a sharp-pointed deer's horn, about 4 inches in length, was inserted. It was thus rendered a dangerous weapon in close combat, and would inflict a deeper wound than the former. They wore it in the girdle. At a later period they used the same species of club, substituting a steel or iron blade resembling a spearhead, in the place of the horn. War clubs of this description are still (1851) to be found among the Iroquois, preserved as relics of past exploits. It is not probable, however, that these two varieties were peculiar to them; they were doubtless common over the continent. The tomahawk succeeded the war club, as the rifle did the bow.

The careful reader will find that the name of tomahawk was originally applied to a wooden weapon, and the arming of this with a cutting point was a step in the evolution of a formidable implement of war. Adopting Mr Morgan's statement, we can refer to this weapon some of the broader forms called awls, and particularly those horn points which are rounded rather than sharpened. To the latter we can assign no more probable use. The horn in his figure of a club has the curve of the antler prong. In the following descriptions a few of the broader forms will be classed as knives, though their use, strictly as such, may be considered doubtful.

Fig. 3 is a flat and sharp awl, generally wide, and expanding still more at the base. Within half an inch of this broad end are two transverse grooves, quite close together. It is finely polished, and came from the Nichols pond site in Madison county, the scene of Champlain's attack in 1615. It is now in the collection of A. H. Waterbury at Brewerton. Fig. 4 also belongs to him, and was found on the east side of the mouth of Chittenango creek, lying in the water. It is moderately broad, fine and sharp. For the most part the edges are parallel, but expand near the broad end into a well curved base.

Fig. 7 is a fine flat and narrow awl, perforated near the base. This came from the recent site in Rice's woods, east of Stone Arabia in Montgomery county. It is somewhat angular. Fig. 8 is a beautiful, very slender and symmetric awl, found east of the Canajoharie cemetery. It tapers from near the base, on either side, to the sharp point at one end, and abruptly curves to the obtuse point at the other. It is the largest of this form the writer has seen and is nearly or quite cylindric. Fig. 9 is in the Richmond collection, and came from Nichols pond. It is a slender and flat awl, with one side nearly straight, and the other curving outward so as to form a broad base.

Fig. 15 is fine and flat, tapering regularly from near the base to the point. The base is angular, the joint not having been fully worked down. Found on the Atwell site by Luke Fitch of Watervale. Most of his articles are now in the Bigelow collection, making further personal reference unnecessary. The next two articles were found by the same person at the same place. Fig. 16 is another slender and long bone awl, tapering directly from a rather broad base to the sharp point. It is half round in section, and is polished all over. Fig. 17 is also half round, tapering from a wide center to each end. The base forms an obtuse point, and there is a deep notch on one edge just above it. A slight ridge extends from near the center to the sharp point.

Fig. 18 is a highly polished bone awl, found by Oren Pomeroy in the vicinity of Chaumont bay. The edges are parallel till near the point, and it has the common flat form. In one edge, just above the rounded base, is a notch, and above this several short and slight cuts. Fig. 19 is one of the prettiest of Mr Pomeroy's articles. It is broad near the center, regularly tapering to a sharp point at one end, and to a narrow rounded base at the other. It is nearly flat, but with rounded edges. Its polished surface has been beautifully mottled by fire, making it very attractive in appearance. A recent inspection showed that in two years its rich hues had greatly faded from exposure.

Fig. 20 is a long and nearly flat bone awl or pin; probably the latter, as the point is obtuse, and the base has transverse grooves as if for ornament. This is from the Christopher site in Pompey. Fig. 21 is from the same place, and is a fine flat implement, tapering from the broad base to the point.

Fig. 28 is a curious curved implement which may be called a large awl. It has been cut lengthwise more than half way along the edge, thus exposing the cavity of the bone. The point is but moderately sharp. It came from the Atwell site, and was in the Ledyard collection.

Fig. 29 is in Dr Getman's collection at Chaumont. It is a much curved, cylindric and pointed bone. The base is irregular and but very slightly worked. This was probably used in a war club. Fig. 30 is one of those forms mentioned, the point suggesting an awl, and the broader part a knife, or, perhaps still better, an instrument for skinning deer, as the parallel edges are rounded and not sharp. The rounded base is nicely worked, and the point is formed by a concave sweep on both edges. Dr Amidon found this near the village of St Lawrence, in Jefferson county. Fig. 37 may be compared with this, differing but little in outline. It is highly polished, and is flat, with rounded edges which are not parallel. The base is broad and notched. It is from the Christopher site in Pompey, and is not a frequent form.

Fig. 31 is a beautiful article found by Dr Getman near Chaumont bay. The edges run in a straight line from near the rounded base to the sharp point. The base is deeply notched, and thence a narrow groove extends on one surface to the point. The implement is flat, and quite brown in color.

Fig. 32 is from the island at Brewerton, where so many fine bone articles have been found. It is a beautiful implement, worked all over, and while generally flat, it has beveled edges. There is a sharp point at each end, and it is less angular there. This is in the Waterbury collection, as is the next. Fig. 33 resembles the last, but is broader, shorter, and has but one point, while tapering toward the base.

Fig. 34 is a peculiar long and slender awl from what is called the Cayadutta fort site, in Fulton county. It has but one point, but the long shaft toward the base is unusually slender. Many fine bone articles have been found on this early site. This one is in the late A. G. Richmond's collection. The fort was probably occupied about 1600, or a little earlier.

Fig. 38 is a unique article from Brewerton, and is in the Waterbury collection. It seems part of a bear's lower jaw, cut down and sharpened for an awl, but with most of the teeth remaining. This is a rare feature.

Fig. 39 is a fine and sharp bone awl, nearly flat, which was found by G. W. Chapin of Fonda, at a site on Wemple creek, 3 miles north of the Mohawk river. It is a large, well finished and symmetric awl, 7 inches long, and therefore not of the very largest size. Mr Chapin found it in ashes, 18 inches below the surface. It has some grooves near the well wrought base. Thanks are due for the loan of this fine implement.

Fig. 40 is a remarkably fine example of a flat bone awl, approaching the knife form. It is widest in the middle, tapering regularly toward each end. Near the narrow and rounded base is a notch on each side. This is from Rice's woods, near Stone Arabia.

Fig. 41 is a fine example of a frequent form of bone awl, or possibly a dagger. The base does not suggest its use in a club, it is so thick. At that end the joint is neatly worked down, but not obliterated. Thence it tapers regularly on all sides to the sharp point. It is highly polished and is a large specimen of this class, being about 5½ inches long. It was found by Dr Hinsdale on the Christopher site. Most articles from this site were collected by Luke Fitch. Fig. 50 is another of these massive awls, if they may be called so, found by Dr Hinsdale at the Sheldon fort in Pompey. It is much like the last, but is both broader and shorter, and the base is less worked. Fig. 51 is another fine article of this class, from the Atwell fort. It is large, highly polished, and is worked almost all over. This is in the Burr collection. Fig. 295 is a much more slender example from the Christopher site, and now in the Bigelow collection. The base is left unworked. Fig. 325 is another massive example from Pompey in the same collection. It is 8¾ inches long, but is much reduced on this plate. It is well worked and somewhat curved. Near the point the cavity of the bone is exposed.

Fig. 46 is a double-pointed flat awl, ornamented with crosshatching, a somewhat unusual feature. This was from Jefferson county, and in the Twining collection, as was the next. Fig. 47 has an ornamentation of grooves, and three perforations toward the base, which is indented. The lower perforation is elliptic, and the others circular. The edges are slightly curved, one being concave.

Fig. 48 is a fine flat bone awl from Pompey, in the Bigelow collection. It is thick and highly polished, with a moderate ridge on one side. Fig. 54 is from the same place and in the same collection. It is thick and highly polished, with a very sharp point. There is a diagonal groove across the base, which may be natural.

Fig. 55 is a curved bone awl from Brewerton, somewhat flattened but having the edges rounded. It is partly hollow. This is in the Waterbury collection. Fig. 57 is a thin, flat, slender, and very sharp bone awl from Pompey, in the Bigelow collection. Fig. 59 is in the same cabinet, and is from the Christopher site. It is a much curved bone awl, broad in the center and pointed at both ends. The convex side is broadly grooved. The implement is triangular toward the broad end and flattened toward the narrow point. Fig. 68 is from the same place. It is a fine, sharp and slender awl, ornamented with grooves near the base, and this feature suggests a pin. Fig. 116 is a fine flat bone awl, highly polished all over, and tapering from the broad base to the point. The reverse is slightly concave. From the same site as the last. Fig. 128 is from the same place, and is placed with the awls for convenience. It is a hollow and nearly cylindric bone, well worked, and beveled for more than half its length across the cavity of the bone, a rounded point being produced.

Fig. 312 is a fine and sharp bone awl, found by Dr Amidon in the vicinity of Chaumont bay. Some lines may be for ornament. One side is flat and the other angular. Fig. 334 is one of the finest bone awls seen by the writer. It is from the same region as the last, and was found by Oren Pomeroy. In the plate it is reduced, but is 8 inches long, quite straight on one side and but slightly emarginate on the other. It is cut down so that the natural cavity appears for two thirds of the length. The edges of this are highly polished, as is all the convex surface. It is very sharp, and for its size very slender.

Fig. 335 is a slender and flattened awl, 8⅝ inches in extent. Both edges are curved, the one being convex and the other concave. The base is broad and convex, with a broad and curving notch toward the inside of the implement, which is much reduced in the plate. It was found on the border of Canajoharie village, in a grave which contained a very fine and perfect R. Tippet pipe of white clay, and is in the Richmond collection. Fig. 339 is a fine, long and slightly curved bone awl, found by Dr Hinsdale at the mouth of Chittenango creek. There is a small perforation near the tip. The width is quite uniform, but with a broader base, and the general surface is flat. In the plate it is reduced, being 8⅛ inches long.

In A. G. Richmond's collection is a fine and slender bone awl from the Otstungo site, near Fort Plain. It is 7¼ inches long. A fine flattened and angular awl from Nichols pond is 4⅝ inches long. Besides others, Dr Hinsdale found a long and nearly straight bone awl on the Sheldon site. It is 8 inches in length, and is angular. Another bone awl from the same site, having a double curve, is 5½ inches long.

In the Richmond collection are the following three awls. A fine and regularly tapering one is from England's woods in Montgomery county, where there is a recent site. This awl is 5⅝ inches long. Another of a straight and slender form is 7½ inches long, and came from the Cayadutta fort. A joint forms the base of this. A similar straight and tapering awl is from the same fort, and is 7⅝ inches long. This is worked throughout.

Mr Van Epps has many fine articles from the above site. Among these is a fine bone awl, 4¾ inches long, generally rather wide, but compressed toward the base. It is ridged on one side. Three long ones taper from a moderately broad base to a sharp point. One is 6 inches long, another is 7¾, and another 8 inches in length. Many other fine ones have been found on this early site.

Double-pointed awls occur in the mounds of Manitoba, and the leading forms and features are found throughout the world. In Canada there is a close correspondence with New York forms.

On Long Island Mr Tooker found the bones of the deer abundant in many shell heaps, but implements of this material were not frequent. Near the city of New York a few awls have been found. John B. James described one fine specimen from Van Cortlandt park, which was 5½ inches long and tapering in the usual way. In the shell heaps bones have been often found which had been split open to extract the marrow. Such examples occur elsewhere.

From the Atwell fort comes a large, straight and thick awl, polished all over, which is 8¼ inches in length. Another fine and straight awl is from Brewerton. It is 5¼ inches long, and has an expanded base. A very slender awl from the Christopher site is 4⅞ inches long, and has a point at each end. It becomes narrow toward one end, and then expands again. This article is quite unusual in form. Among other long awls may be mentioned one in the Buffalo academy of science which is 7 inches long.

At the mouth of Perch river, in Jefferson county, the writer dug up a fine polished bone awl, which was 7⅞ inches long, and nearly flat. It was not straight, but distinctly bent about a quarter of the way from the base. Another slender Jefferson county awl is 6½ inches long, and was found by Dr Amidon. Most of his best bone relics have been from two sites. This awl is angular, light colored, and thoroughly worked except at the base.

These examples will suffice to show how fine, abundant and widespread these implements are in the Iroquois territory, but it might be unwise to suppose they were less used elsewhere.

Fig. 5 is one of the broad and flat forms, which have a narrow and sharp point like an awl, but are otherwise suggestive of knives. They are not usually sharp enough for cutting flesh or hides, and a party of excavators jocosely called them paper knives. They might now answer for these. They may have been inserted in war clubs, but it is more probable they were used in flaying beasts. This fine example has a very angular outline, the broad surface suddenly contracting toward the slender and sharp point. It was found by Dr Hinsdale on the island at Brewerton. Fig. 26 is a flat and thin bone knife from the Atwell fort. The form is broad, the outline curved, and the base neatly rounded. There can be little doubt of its use. Two other fine examples have been described among the awls. Fig. 42 is one of the most pronounced forms. It is from the Christopher site, and is in the Bigelow collection. The general form is broad, the edges not quite parallel, and it is everywhere polished. On the reverse side it is broadly concave. One end abruptly narrows to a point, and the base slopes to a point on one edge. One surface is rounded, but it becomes thin and flat toward the point of the implement. This is one of the finest examples of this form yet found, and its use as a skinning implement can hardly be questioned.

Fig. 43 is another fine specimen, found by Dr Hinsdale on the island at Brewerton. It is flat and has nearly parallel edges. One of these is curved to make a sharp point, and there is a slight indentation near the rounded base. Fig. 58 is another, still finer and also more definite in character. It is in the Bigelow collection, and from the Christopher site. It has a double curve at the base, which is rounded. The edges are thick and mostly parallel, and it is worked on both sides. It is pointed, and the upper surface is moderately ridged. The outline is that of a broad knife, but there is no long cutting edge, and it may have been used in a war club, but more probably as a skinning implement. Fig. 60 is a fine article of the same kind, flat and with a longitudinal groove on one side, and somewhat rounded on the other. It has a broad point, and the base may have been broken. This is from Brewerton. Fig. 61 is a fine, flat bone awl or narrow knife from the Cayadutta site. The point has been lost, and one edge ran straight to this. Most of the length the edges are parallel. The base shows a transverse cut close to the ornamental grooves, and it seems to have been broken there. The carving is of straight lines variously arranged. This is in the collection of Percy M. Van Epps of Glenville.

Fig. 62 is a flat and curved bone implement, one of the broad, rounded ends being sharpened. The edges are neatly rounded, and it is nearly a quarter of an inch thick. It was found by Dr Hinsdale on the island at Brewerton. Fig. 65 is fine and thick, and is polished all over. It is somewhat angular, and the reverse is concave. This is from Pompey and in the Bigelow cabinet. Fig. 66 is a broad, flat and curved bone knife, worked all over and ornamented with straight lines variously arranged. This was found near the village of St Lawrence, and belongs to Charles Crouse of Chaumont. These ornamented articles seem more frequent in Jefferson county than elsewhere.

Fig. 75 is unique. It is a thin and neatly worked knife, made from the antler of a young deer. It was found by George Slocum in the Onondaga valley some miles south of Syracuse.

Fig. 84 is a broken bone implement from the vicinity of the village of St Lawrence, and is decorated in the frequent style of that region. It suggests a long knife with parallel edges. These are rounded. The reverse is flat with a longitudinal groove. Fig. 88 was found by Dr Amidon near the same place. It is flattened and fine, with a longitudinal groove in one surface. These are usually part of the natural cavity.

Fig. 113 is a form frequent in Jefferson county. One collection has many and fine examples, but figures of these could not be procured. One similar to this, but larger, has four perforations, and some others have the same number. The one here represented is in the Bigelow collection and from the Christopher site, showing the probable migration of the early Onondagas from Jefferson county. It is highly polished all over, is nearly flat, and is pointed at both ends. The edges are rounded, and it has two perforations. Fig. 115 is from another early Onondaga fort, the Atwell site. It is flat, dark, and polished all over. One end is pointed and the other rounded. The edges are rounded, and there is one perforation. Fig. 282 may be merely an awl, but is very broad. It is polished all over and is quite thick. The base is indented, and the edges are slightly convex. The frequent groove appears in one surface. This is from the Atwell fort.

Fig. 305 is the first in a series of three illustrating the formation of a bone knife, kindly furnished by Dr R. W. Amidon, and all from Jefferson county. This is a long medullary bone, split and chipped to a flat surface, the outside surface being left untouched. Fig. 306 is of a flatter bone, not only chipped on one side but brought to a knife form. Fig. 307 is worked into better shape, and is ready for the final grinding and polishing. This is whiter than the other two.

Fig. 114 is from Jefferson county, and made from a split bone. One end is pointed, and the base is nearly square. There is one large perforation near the edge, both edges being much curved.

A rude bone knife was found on the Seneca river, nearly opposite Three River Point. The general form is that of a case knife, resembling the bone knives the Onondagas made for sale nearly a century ago. The article is 3⅝ inches long, but the blade is short. A flat bone implement of the knife form comes from the Christopher site. It is worked all over, has a large central perforation, and rounded edges, indented on one side toward the broad point. The length is 4 inches and the breadth ¾ of an inch.

Fig. 319 is a fine, broad knife made from the joint of a large, flat bone. It was found on the Onondaga outlet by Dr Hinsdale. It is highly polished on both sides; and for its length it is thin.

Punches and blunt implements

No precise use can be safely assigned to some articles with rounded or flattened ends. Those which are curved and slightly tapering were probably inserted in clubs. Others have purposely enlarged ends. If they had points, they might be considered pins, but usually these are lacking. It has been thought that some were used in decorating pottery, but a hollow bone seems the only bone article employed for this. In a general way it may be best to describe them simply as they are, unless there appear reasons for some special use.

Fig. 52 is an antler prong with a rounded point, found by Dr Hinsdale in Pompey, on the Sheldon site. It is safe to assume that this was used in a war club, as all of like character probably were. Many such forms will be left unnoticed.

Fig. 53 is usually termed a punch, without further suggestions of use. It gradually expands toward the larger end, which is neatly worked and almost flat. The smaller end is as neatly rounded, the general form being cylindric. This is from the recent site in Rice's woods, near Stone Arabia. Fig. 83 is a bone implement in the Waterbury collection at Brewerton. It suggests a small pestle, and is nearly square in section, having the edges and ends rounded. Fig. 87 is a Mohawk bone article in the Richmond collection, nicely worked and cylindric throughout. At one end the cylinder is abruptly enlarged, and both ends are neatly cut. Fig. 90 is a long and thick cylindric bone, which is unperforated. It is well worked, and the ends well rounded. It is in a Buffalo collection.

Fig. 91 is a very long cylindric bone punch, from the fort near Pompey Center. It expands slightly toward one end, and very much toward the other. Fig. 92 is a long, slender and cylindric bone implement, slightly curved. Near each end of the concave edge is a sharp notch. This is not perforated, and is one of four of various lengths, taken from a grave near Rochester Junction by C. F. Moseley of Bergen N. Y. The grave contained European articles. The other bone relics were shorter and thicker, evidently intended for beads but not perforated.

Fig. 96 is flat and thick, parallel sided, and with the ends nicely rounded. Dr Hinsdale found this at Brewerton, and with it two others, differing only in being shorter.

Fig. 97 may be a broken pin, having a thick and angular head. The general form is cylindric. It is in the Richmond collection, and came from Richmond Mills, Ontario co. Bone fishhooks were found with it. Fig. 99 is a cylindric bone, expanding into a broad, flat and curving edge. The small end is neatly rounded. It is from the recent site near Stone Arabia. Fig. 100 is a fine curved and cylindric bone pestle, found with a bone mortar at the Garoga or Ephratah fort, in Fulton county, by S. L. Frey. It is very neatly worked.

Fig. 103 is a short bone punch, cylindric, but expanding toward one end for nearly half its length. This is in the collection of F. H. Vail in Pompey Center, and comes from the fort, a little south of his house, known as the Lawrence fort. Fig. 112 is much like the last, but is longer, while the expansion is shorter. Some polished bone beads were with this, of the same diameter and average length. This is from the Atwell fort, and in the Bigelow collection. This form seems most common in the early historic period.

Fig. 131 is a cylindric and tubular horn implement, and may have been a charger for powder. The narrower projection at one end is an eight-sided stopper of horn. Found by Luke Fitch on a recent site north of Watervale in Pompey. Fig. 301 is a well worked cylindric bone, which is not perforated but may have been intended for a bead. It came from a grave at Rochester Junction. Fig. 297 is smaller than the last, but is of the same character and from the same place. The same may be said of fig. 298, which is much more slender than either. From their presence in a grave and nicely rounded ends, it may be inferred that they were finished articles, whatever their proposed use. Fig. 330 is a very neat cylindric punch, with the frequent neatly rounded ends, one of which is expanded. It is from Rice's woods near Stone Arabia. In the plate it is reduced in size, the true length being 3 inches.

Fig. 341 is a curious article from Brewerton, 9 inches long, but reduced in this plate. Dr Plato, the finder, thought it a tusk, but it is probably horn. For more than half the length from the rounded point it is cylindric; thence toward the base it is more quadrilateral, but with rounded edges. The base is abruptly and uniformly compressed, and has a long rectangular perforation. In Europe such holes were for holding stone points, but this does not seem the purpose here. The implement follows the natural curve of the material. Many curious things were found with this.

Fig. 346 is another curious article of deer horn, resembling the last in some respects but not closely. It is the lower part of an antler, retaining the base almost unchanged. All the prongs have been removed, and much of the surface dressed down. The tip has been cleft and sharpened where it was cut off, and toward the base is a rectangular hole, such as is found in the primitive bone whistle.

This and the last could hardly have been used as handles for stone points. It measures 7½ inches from tip to tip, and is nearly cylindric. This came from a grave at Jack Reef, on the Seneca river, and is in the Bigelow collection. A shorter prong was found with it.

A few other examples may be mentioned. One bone punch from the Atwell fort is almost elliptic in section. It is ⅜ of an inch wide and 2¾ inches long. From the same place comes a tapering but not pointed bone punch, which has the ends rounded, and is 2⅞ inches long.

In the Vail collection at Pompey Center is a cylindric and tapering horn punch, 5 inches long. Dr Hinsdale found a cylindric, slender and perforated bone at Brewerton, both ends of which were broken. It was 6¾ inches long, with an average diameter of a quarter of an inch. Another curious article is in the Waterbury collection. It is a slender, irregularly curved and pointed implement, 6⅝ inches long. There are transverse cuts near the pointed end, and rough and shallow grooves around most of the article. Dr Hinsdale also had, from the same place, a curved and cylindric bone, 4½ inches long. In W. L. Hildburgh's collection are many of the so called punches; and worked antler prongs occur on most village sites. One odd article in his collection is a curved piece of antler, 7½ inches long, which has notches toward the upper part of the convex edge. This came from Pompey.

Beads and pendants

Fig. 35 shows one of the birdlike pendants, which are perforated laterally through the neck. This is ornamented with dots and lines, and comes from Scipioville. They are more frequent in shell than in bone. Fig. 36 is another from Honeoye Falls, belonging to C. F. Moseley of Bergen. There are transverse lines on this, and the eyes are represented. Fig. 129 is from Pompey, and is ornamented with dots. All are of the historic period, late in the 16th and early in the 17th century.

Fig. 95 is a moderately long cylindric bone bead, highly polished, and well worked at both ends. This was taken out of ashes at the Atwell fort in 1896 by Rev. W. M. Beauchamp. It is a fine example of its class. On sites of that age bone beads share the honors with those of shell, while others but a few years earlier may show only bone beads and ornaments.

Fig. 124 is a long, straight and cylindric bone bead, found in Pompey. It is polished and slender, and has transverse diagonal lines. Fig. 132 is from the same place, its outline being a long ellipse. It retains its polish. Fig. 136 is a large and cylindric bone bead from Pompey. It is a little curved, and the ends are well finished. Fig. 137 is a straight and polished cylindric bone bead from the same town. It is adorned with cross grooves. Fig. 138 is another cylindric and curved bead in the Waterbury collection at Brewerton. Long beads usually retain the curve of the bone, and the perforation may be unaltered or enlarged. Fig. 174 is a short, flattened cylindric bead found near the mouth of Perch river.

Fig. 139 is of a different character, and is from the fort near Jamesville, burned in 1696. It presents a rectangular outline here, but is triangular in section, and was made with metallic tools. It is in the Bigelow collection. Fig. 140 is a curious little ornament or implement from the Atwell fort, unperforated, though a slight depression may indicate a hole begun. It is foot shaped and indented, and is now in the Burr collection. Perforated articles, similar in form and size, have been used to keep open the slits in noses and ears. One like the figure here given was found in a mound on the Bay of Quinté, on the north shore of Lake Ontario.

Fig. 144 shows the end of a femur bone, worked and perforated for suspension as an ornament. This was found by Dr Hinsdale on the Sheldon site in Pompey. The outline is more elaborate and the perforation larger than in several examples from another Pompey site, a few miles away, and perhaps of 50 years' earlier date. Fig. 356 to 361 are all from the Christopher site, and in the Bigelow collection. Fig. 357 is a good example of the same ornament. It is partly smoothed on the reverse, and has a small perforation, like all others from this site. Fig. 358 has been ground smooth on the reverse. Fig. 359 is perforated through the natural depression, and smoothing has been begun on the other surface. Fig. 360 is made from the concave capping of a joint. The natural surface is here shown, slightly worked. On the reverse it is ground smooth.

The perforation is central. Fig. 361 shows the rough side of a similar plate, showing signs of use. The figure presents the convex surface. All these are of a deep brown color, which may have come from exposure or choice.

Fig. 356 is a broken but well wrought ornament, hard and white as ivory, and with a high polish. It is a carving of a bird's head, with a perforation for the eye. The lower edge is sharp, and ground from both sides. It is concave on the reverse.

Fig. 145 is a short and cylindric bone bead from Buffalo. Fig. 146 is longer and more slender, and was found in Cayuga county. It has transverse grooves and is recent. Fig. 147 is a black bone bead, discolored by lying in the water. It was found by Dr Hinsdale at the mouth of Chittenango creek, and is short, curved and cylindric. Fig. 158 is a short bead in the Richmond collection, from the Nichols pond site. Fig. 165 is a long and cylindric bead from Rice's woods, and is in the same collection. It has three groups of encircling grooves. Fig. 167 is a so called crescent from Venice, Cayuga co. These are usually of shell. In stringing they were placed close together, or separated by short beads. Fig. 276 is unique, and is in the Richmond collection. It comes from England's woods, where the caches are found northeast of Stone Arabia. It resembles the common bird forms except in its large size, and in having feet near the tail. Fig. 300 is an ovate bone ornament in the Buffalo academy of science, probably intended for perforation and suspension.

Fig. 347 is a flattened ornament, perforated from top to bottom, which would be triangular but for being cut off above. Fig. 348 is similar, but is almost pointed. In section each is a flattened ellipse. Several of these were found varying much in outline and size, but having the same general character. They were obtained 2½ miles north of Fort Plain.

Perforated and grooved teeth

Teeth and claws have been a favorite savage decoration all over the world, and the perforated bears tooth of Europe scarcely differs in appearance from that of America. There are probably very few village sites in New York where this is not found, cut, perforated or with a groove around the base. On camp sites of brief occupation these teeth can hardly be expected. The teeth of smaller animals were in less favor, though sometimes used. Human trophies perhaps had not the esteem which some have supposed. Fingers were cut or bitten off by the fierce Iroquois, but there is positive evidence that these were not preserved, as some have thought. Accustomed as they were to plucking out the nails of captives, it is not likely these were kept as trophies, as has been reported. The French often told such things, as the enemies of the Iroquois related them, and De Vries said that either the Mahikans or the Mohawks "place their foe against a tree or stake, and first tear all the nails from his fingers and run them on a string, which they wear the same as we do gold chains. It is considered to the honor of any chief who has vanquished or overcome his enemies if he bite off or cut off some of their members, as whole fingers." *De Vries*, 3:91. This, he was told, was done at Albany, which was in the Mahikan territory.

Father Jogues mentions the Mohawk practice:

> There remained to me only two nails; these barbarians tore these out with the teeth, lacerating the flesh beneath, and stripping it even to the bone with their nails, which they nurse until very long. *Relations, 1647*

In the *Relation* of 1658 it is noted that the savages "nourish their nails as a mark of nobility, showing that their hands are not fit for work." A necklace of this kind might thus show the rank of those tortured or slain. Most narratives give the impression that they were torn out and cast away. In the nature of things they would not have survived to our day, if preserved then.

In a paper entitled "Medicine men of the Apache," Capt. John G. Bourke describes the use of perforated human teeth as ornamental trophies, in many parts of the world. He says, "In my own experience I have never come across any specimens, and my belief is that among the Indians south of the isthmus such things are to be found almost exclusively. I have found no reference to such ornamentation or 'medicine' among the tribes of North America." *Bourke*, p. 487

Human teeth occur on Iroquois sites unconnected with graves, for in their cannibal feasts these might be dropped anywhere, but perforated teeth are certainly rare. Fig. 162 is one from an Oneida site near Munnsville N. Y., now in the writer's possession and attached to a string of small disk beads. It is perforated laterally at the base, and is in good preservation. In graves the teeth are usually the best preserved parts of the human frame.

Fig. 195 is another rare specimen from the Onondaga fort of 1696. It is the crown of a tooth neatly cut off and perforated for suspension, the hole being at one corner. The grinding surface is much worn, but it appears to be one of the lower side teeth of the black bear. This is in the Bigelow collection. Fig. 188 is a perforated tooth from Pompey, owned by Mr Fitch. A similar one was with it, and it is one of the front teeth of the woodchuck. Fig. 293 is much like the last, but has been cut down to a greater extent. It was found at Munnsville.

Fig. 178 is part of a beaver's tooth, split and then ground flat on the inside. It was found by Dr Hinsdale at Brewerton. Fig. 179 is another woodchuck tooth from the Christopher site, which is notched like a saw. Such examples are rare. Fig. 296 is another perforated and worked tooth of the beaver, found at Brewerton. It is of a red color and quite large.

Fig. 193 is an elk's tooth, perforated and ground off at the base. It is in the Richmond collection. It was found on the Otstungo site. Fig. 194 is another from Brewerton. The only work on this is the perforation. Several found there were perforated and more or less ground. Fig. 272 is from the Onondaga fort of 1696, and is in the Bigelow collection. Another elk's tooth with it was cut off at one end. Fig. 273 is a smaller tooth in the Burr collection, found on the Atwell site. It is quite dark in color, and one with it was opalescent. Fig. 274 is a smaller perforated tooth from a prehistoric fort a mile west of Baldwinsville and north of the Seneca river. It is in the Bigelow collection. Elks teeth were and are highly prized by the Indians, and now bring a high price. A few more will be mentioned later.

Fig. 294 has the appearance of a wolf's tooth, and is in the Buffalo collection, where there is another. Fig. 292 is similar and from Geneva.

Bears' teeth unworked are frequent; and out of a great number of those used for ornament a few selections are here made. They occur on almost all village sites, and have a wider distribution than any other bone ornament in time and territory. Here there are three principal divisions: those grooved for suspension, those perforated, and those cut off for some other purpose. Fig. 286 is the common form of those perforated, the work being confined to the perforation as a rule. This is in the Vail collection at Pompey Center, and was found in 1894. Many of these have been figured. Fig. 316 is of a very large size, and was found by Oren Pomeroy in the vicinity of Chaumont bay. As it was evidently broken before being worked, it was probably the cherished trophy of some big bear fight. The base is indented and the perforation large. It is carefully worked all over, and every fracture is neatly smoothed off.

Those grooved for suspension show more variety, and yet require but little illustration. Fig. 283 is a tooth both grooved and much cut down. It has been split since it was formed, and is in the Vail collection. Fig. 288 is simply grooved, and is from Rice's woods in Montgomery county. They seem most abundant on recent sites.

Fig. 287 introduces us to a very interesting class of bears teeth. It was found by Dr Hinsdale on the Christopher site, and is merely cut off at the base, presenting a flat surface there. This site was probably occupied in the 16th century. Fig. 289 is unique, having a piece neatly cut out of the point, leaving it very sharp. This was found in 1899, on the north side of the river at Brewerton, and is in the Waterbury collection. Much of the surface has been ground and polished.

Passing from these, we come to the distinct class mentioned, where the base is sharply cut away nearly or quite half way to the point, exposing the cavity of the tooth. Fig. 143 is a good example, and was found by Dr Hinsdale at Brewerton, in or close to the grave where the walrus tusk implement was obtained. It was probably of a later date than that. Four large teeth and one smaller were worked alike. Fig. 290 is another of these. Fig. 291 is from the early fort west of Baldwinsville and north of the river, probably occupied in the 16th century. It is in the Bigelow collection, and is cut off in a different way. While this form is rare, it has been found on an early site in Ohio.

A few perforated or grooved teeth may be mentioned. A bear's tooth with a groove comes from the Atwell fort, and another with a narrow groove from lot 27, Pompey. One perforated at both ends is from Jefferson county, and thence comes another with the base rounded and the tip ground sharp. Another perforated example is from the neighborhood of Waterburg in Tompkins county. A large one is from Rice's woods. Mr Bigelow has a fine one from the fort of 1696, and a perforated deer's tooth from a fort near Baldwinsville. Raymond Dann has many from a site near Honeoye Falls. A perforated elk's tooth is from Munnsville, and another is in the Vail collection.

In the Hildburgh cabinet are good examples of all the forms mentioned. One is a good specimen of those of the bear cut off near the center, and is from a recent site a mile north of Lima N. Y. This would bring them into the historic period, but most seem a little earlier. Three fine and grooved bears teeth are from a recent site at Oneida Valley, and several perforated ones are from West Bloomfield. With these were perforated elks teeth.

Ornamental forms of bone

Unless some of the articles called awls were used for decorative purposes, bone and horn were but little employed in adorning the person. A few things have an ornamental character, but they are so few that they will not detain us long, as beads and pendants have already had attention and bone combs will be treated separately.

Fig. 105 is a fragment found by Dr Hinsdale on the Christopher site. The broader part is ornamented with long rectangles engraved in the bone, and the narrower portion with notches in the edges. It may have been a comb, but more probably was the handle of some implement. Fig. 106 is unique, and seems the upper part of a pin or awl. It ends with the head of a fish bent a little out of the plane of the handle, and below this is a broad band encircling the handle. It was found by the writer on the fort site before mentioned as west of Baldwinsville.

Fig. 150 belongs to Col. W. B. Camp of Sacketts Harbor, and was found on a point east of that place. There are four human heads at the top, and there is a deep cut at the base as though for the insertion of some instrument. The general character is that of recent work. Fig. 151 is a curiously carved article from the Nichols pond fort. It is hollow and flat, being but $\frac{5}{8}$ of an inch thick. The two hollows within are not connected. On the reverse and toward the point are three parallel elliptic openings into one cavity. By these it might have been attached to the apparel, or a blade might have been inserted in the broad opening at the other end. The reverse is quite flat. As this fort is identified with Champlain's expedition of 1615, there is a definite age for this carved bone. In some respects it resembles Eskimo bone handles, and probably was made with metallic tools.

Fig. 155 is from the Otstunge site and in the Frey collection, and may be compared with fig. 151. It has an owl face and elliptic openings on each side, and was probably a handle. Fig. 154 is also in the Frey collection, and is from a figure made by him. His description is brief: "A piece of antler decorated; cutting evidently done with a flint knife. Found at Garoga, August 1889, by S. L. Frey." The edges of the terminal opening are scalloped, and the straight grooves are variously arranged. The elliptic grooves are a novelty at so early a date, and with the tools probably used. It may have been a handle, but the ultimate design may have been a pipe. It is certainly fine.

Fig. 153 is one of three articles found at Union Springs, and is the smallest of the lot. The points of all are cut off. The longest is 4 inches in length, an inch broad at the top and partly scalloped there. Another is $3\frac{1}{2}$ inches long, as wide as the last and with marginal dots. All are of thin horn, cylindric and hollow. This one is abruptly compressed toward the point, and has short marginal cuts at the broad end. The general form of all approaches a cone. In John Murdoch's *Ethnological results of the Point Barrow expedition*, p. 189 and 301, are some figures resembling these, but with well defined teeth of some length. They were called combs for deerskins. These could not have been used in that way, and more probably may have held charges of powder.

Fig. 157 is the broken, ornamented head of a pin or awl found on a fort site west of Baldwinsville, and now held by the writer. The reverse is a little differently carved. Fig. 310 is a broken article, apparently made from a moose antler. The form may have been obtusely elliptic with broad notches or points at the ends. Dr Amidon found this in a refuse pit near St Lawrence village, and thus described it:

> Part of a gorget, or some other article of adornment, made from — I should say — moose or caribou antler, because of its great breadth and flatness. Probably double-ended, i. e. symmetrical. Found only one end. On the back are two holes for suspension by a thong. The front is traversed by transverse lines, between which are decorations of a cuneiform character.

The two holes may have terminated in the interior cavity, as they converge, but may possibly have passed through to the frontal surface. It probably lacks but little of the original length and breadth, judging from the surface curves. The arrowheaded marks are peculiar, and in four rows. Another might have been expected, but there are no signs of this. The interior is now cellular, without signs of work. The general style is somewhat recent.

One class of grim ornaments has left some examples. The New England Indians were at first credited with taking the heads' or hands of their enemies as trophies. The Neutrals of Canada gloried in the number of human heads they had taken. This may be understood literally or may refer to the scalps which they removed from the heads. However this may be, ornaments made from human skulls are sometimes found in New York. Fig. 141 is one of the best examples now known, and was in the Twining collection. It came from Rutland in Jefferson county, is nicely worked around the edges, and has nine perforations. Fig. 148 is a fragment found in Pompey. There are two perforations remaining, and part of a third. It is flat and thin. Fig. 149 is a perforated pendant of bone from Hemlock lake, Livingston co. N. Y. A photograph of this was furnished by Dr T. B. Stewart of Lock Haven Pa. The bone is much curved, and the figure suggests part of a skull.

Fig. 201 is also of a doubtful nature. It is a small oboval bone gorget, with one large and two small holes, and is slightly concave. It is a recent article from East Bloomfield, owned by Irving W. Coats. Fig. 202 is in the Vail collection, and comes from the recent fort near Pompey Center. It is a grooved, cut and perforated piece of human skull. A grooved fragment was found with this. Fig. 303 is a thick, flat and curved bone. The writer does not remember whether it is a piece of a skull, as is probable. There is one very large perforation, and part of another intersected by one worked edge, showing that it was at first a larger ornament, which was broken and recut. The two worked edges are curved. This is black and light brown in color, and from the Atwell fort.

Fig. 333 is part of a perforated skull found by Dr Amidon in Jefferson county. It was evidently much larger, but a small part of the original curved and polished margin now remaining. There are now two holes, the one farthest from the curved margin probably being near the original center. In the plate the fragment is much reduced, the full length being 2¾ inches. Dr Getman has similar articles, one having an ornamented edge and several perforations.

Mr Twining reported some articles from the old Tamblin farm, in the town of Rutland, Jefferson co. and among these "an amulet, some 5 inches in diameter, drilled with seven holes, and cut from a human skull. The holes were undoubtedly made on the head of a living subject, judging from the appearance of the openings." He furnished the sketch for fig. 141, also from Rutland, but that is smaller and has more perforations. At another place in that county he found "two circular amulets with holes therein, from human skulls."

In the Brewerton cemetery Dr Hinsdale obtained a flat piece of bone, sawed so as to have six edges. The extreme length was 2¾ inches. In this was a large circular perforation, ¾ of an inch across. The ultimate design can only be surmised.

A very curious long skull was found in Cayuga county a few years ago, which was circularly perforated in an upper angle of the forehead, but not by drilling. The proportions were very remarkable, being 8 by 4½ inches, and caused by pressure. The interior ends were rather smooth, and the sides strongly corrugated.

Among human bones may be mentioned a much flattened tibia, found in the grave with the walrus tusk implements at Brewerton by Dr Hinsdale. It is 8⅗ inches long, 1¼ inches wide in the center and $\frac{11}{16}$ of an inch thick, which is a moderate form of platycnemism. Most of the bones in this grave were decayed. Fig. 336 is another human bone from the same place, which is worked at one end and the natural groove deepened. This is reduced.

J. S. Twining furnished the writer with several outlines of carved bone articles from Jefferson county, but the details were too few for reproduction here. Henry Woodworth, of East Watertown, has worked and perforated pieces of human skulls in his fine collection, and many of his bone articles have ornamental lines. Unfortunately he would allow no drawings to be made.

Fig. 111 appears to be a bone pendant, and was found near Munnsville. Provision for suspension has been made, and the point has been cleft. Fig. 85 is an open and ornamented bone, pointed like an awl, but possibly an ornament for the ear or nose. It comes from Buffalo.

Fig. 63 and 64 represent a type of bone articles from some parts of Jefferson county, which has been reported nowhere else. They are of various sizes, like a canoe paddle in outline, and with a knob at the top. Sometimes they are ornamented with engraved lines. The writer has seen them only in the Twining and Woodworth collections, and they seem purely local. Since writing this he has examined a fine one found in the summer of 1901 by Mr Pomeroy, at Storrs Harbor, Jefferson co. It is flat and thin, and 5 inches long. At the same place Mr Pomeroy got a fine clay pipe bowl, with a human face before and behind.

Fig. 130 may have been intended for an ornament, possibly a pendant. It is perforated for suspension, and compressed at that end, but was probably used for receiving charges of powder. It is recent of course, and was found in Fleming. The material is horn, and is quite thin.

Fig. 56 may properly be called a bone pin, having a thin and flat head, and a point which is moderately sharp for so thick an article. The diameter is but half as much the other way. Bone pins with distinct heads are very rare, though one example may have been already noticed. Dr Hinsdale found the one here described at Brewerton.

Fig. 278 is reduced from Schoolcraft's great work on the North American Indians, and shows a long and slender pin of polished bone, found in 1835, in excavating at Fort Niagara N. Y. It is 10½ inches long, ⅛ of an inch thick, and is somewhat curved. The head is bifurcated, and has two short hooks on each side. He called it an awl, for which it is unnecessarily long and slender, and there can be little doubt that this fragile and well preserved article was an ornamental pin.

Bone images and masks

Artistic results in bone carving could hardly be expected before the Indians had metallic tools. So, when a well worked face or head appears, it is natural to infer the use of these, even on what seem prehistoric sites. Fig. 177 is a finely made bone face, with a narrow and rudely worked projection beneath. On each side are half circular notches where the ears should be, and there is a partly drilled hole in the back. This is interesting from its age, being from the early Cayadutta site, where but one recent metallic object has been reported. It is probably not far from 300 years old, and is in the Richmond collection. The work suggests the use of metallic tools.

Fig. 156 is in S. L. Frey's fine local collection, and came from the Otstungo fort, always classed as prehistoric by working antiquarians, though Mr Squier was told that European articles had been found there. It is a well carved bone head, and the helmet-like headdress and possible moustache suggest some knowledge of Europeans. Some other articles from this site hint at the same thing. If made with stone tools, it is certainly very remarkable.

Fig. 152 is a well wrought bone head from the Onondaga fort of 1696, and was probably made with European tools. It is in the Bigelow collection, and was worn as a bead, there being a single large perforation from top to bottom. Usually there are more perforations in such objects, to insure the face's turning outward. For this purpose there are three small holes for suspension in fig. 175, which is in the Hildburgh collection. It is a small and neat bone mask, with a projection above and below. This is from a recent site at West Bloomfield, and is much like some stone ornaments of about the same age.

The remaining figures of this class are full length bone images. Fig. 169 is from Honeoye Falls, and is in the Dann collection. It is a large, flat human image of bone or horn, unpolished and unbroken. It has much the character of the bone combs so frequent there, but seems complete in itself. Fig. 170 is a bone image of a small child, smoothly carved. It is from the Mohawk valley, and in the Richmond collection.

Fig. 171–73 are from drawings of three bone images in the state museum, made by R. A. Grider, and much like Canadian examples. All come from West Bloomfield, and are light brown in color. Fig. 176 is the largest bone image yet found here. It was found in a grave of an adult and a child, which contained bone beads and some copper wire, and belongs to S. W. Morse of Willow Point N. Y. The back is much weathered, and there are longitudinal cracks. There is a prominent headdress, probably representing the symbolic horns of an Indian chief.

A finely carved head, terminating a piece of deer horn, comes from an Indian site at East Aurora. It is of very recent character. In the deep ashes of a fireplace in the Genesee valley, a beautifully carved Chinese head of ivory was found, which must have come there in the way of Indian trade. Prof. G. H. Perkins of Burlington Vt. has a fine bone mask from the northern Vermont line, closely resembling some small stone masks of New York. All such articles are of recent date.

Bone combs

The Indian use of bone combs seems not very old, and yet is prehistoric in a sense. Most of those found are of the 17th century, but some seem a few years earlier, suggesting a knowledge of Europeans without direct contact. The early ones are very simple in design, and with few but strong and large teeth. They are almost entirely confined to Iroquois sites, or those classed with them. Out of a large number a few forms are given here of both periods. All those in Jefferson county, and a very few elsewhere, may be called prehistoric.

Fig. 186 is one of these early forms from Jefferson county. It has scalloped edges and some elliptic perforations, and the four large teeth are all broken. Fig. 187 is from a drawing furnished by Mr Frey. The type is early, though from a recent Mohawk grave. There are but four teeth, and the upper part of the comb is highly ornamented. The article is perfect and fine. Fig. 196 is from an early Onondaga fort of the historic period, on lot 100, Pompey. Three teeth remain, but another seems to have been broken off while in use, as the fracture has been ground down, leaving only the notch. There is a large perforation near the top, opposite which is a sharp notch on either side. There is no distinct ornamentation. Fig. 198 is a fine broken comb from Hemlock lake, Livingston co. N. Y., and belongs to Dr Stewart of Lock Haven Pa. One of the large and long teeth has been broken off. In the small upper part there is a large circular central perforation. Fig. 199 is from the Atwell fort. This also has three teeth, and there is an elliptic perforation near the top, with grooved lines. Fig. 200 is from the same site and in the Burr collection. There are four teeth and 11 perforations. Both these are of the simple early forms. There are good examples of these in the Woodworth collection. Fragments of some plain combs have been found at the Lawrence fort near Pompey Center. In the Richmond collection are some rude perforated and unperforated plain combs, but their width and the number of teeth at once show their recent date.

A plain, broken and double comb has been ascribed to the Atwell fort. The location is probably erroneous, as it has many teeth, and its general character is too recent for that place. It certainly was made with metallic tools. In the state collection is a large bone comb from Genesee county, which has three teeth and is 8½ inches long. It has a human figure in the upper part, but the general type is early. There are lines and openings about this figure, and above and along one margin are small circular perforations.

The figures which follow are of the historic period, and are mostly symmetric. Fig. 180 has two men facing each other in combat, and is perfect. It is broadest at the top, where the corners are neatly rounded. This is from Scipioville, Cayuga co. The Cayuga specimens were found by W. W. Adams, but have gone into several collections. Another of these has two serpents in a similar position.

Fig. 181 is unsymmetric, and the teeth are mostly gone. It is from Honeoye Falls and in the Dann collection. A bird faces a man, and is of about the same hight. The bird's bill was probably joined to the man's shoulder. Fig. 182 is also unsymmetric, and was found at Rice's woods. It has a lizard above, the long tail hanging down one side. Below this are lines in various directions. But two of the teeth are broken. They are many and short.

Fig. 183 is from a grave at Rochester Junction, and belongs to C. F. Moseley of Bergen N. Y. It is perfect, and two birds form the upper part, their long bills meeting. Fig. 184 is a fine comb from the McClure site in Hopewell N. Y. Most of the teeth are broken, but the upper part is entire. This has a perforation in one upper corner, and there are several figures scratched on the smooth and broad surface. It may have been unfinished. It was found in 1890. Fig. 185 is unsymmetric and large. A man behind a horse, and one on it form the principal design. This was found in a young woman's grave in one of the Seneca villages burned in 1687, at Boughton hill near Victor N. Y., by Dr A. L. Benedict of Buffalo. The teeth spread, and nearly half are gone. The skeleton in this grave was of a person about 18 years old, and was buried in a reversed position, the head down and feet above. In the graves were a brass kettle, traces of a basket, about 12 feet of French glass beads of several colors, 20 feet of red glass beads, about 35 feet of council wampum arranged for a belt of five or six rows, and seven long shell beads. Besides the comb, there was also the skeleton of a turtle.

Fig. 189 shows a bear at the top of a large comb, and is in the Dann collection. The teeth are badly broken. Fig. 190 is a recent, fine Mohawk comb in the Richmond collection. There is a large arched opening above, and this and the outer edges are notched. Fig. 191 is a long, rectangular and flat bone in the same collection. It has a circular perforation at one end, and regular notches at the other. Mr Richmond thought this a pottery marker, but pottery has no even and regular lines, and it was probably begun for a comb.

Fig. 192 is a fine comb with about half the teeth remaining. Two turkeys, separated by a central post, have a circular ornament above their heads. This is from Fleming, Cayuga co. Fig. 197 is of a similar character and from the same place. Two partridges are fighting. Usually the space below is plain; in this case lines are regularly arranged in various directions. Fig. 337 is the longest comb which has met the writer's eye. It is slightly broken in places, but the defects are not serious. Two quadrupeds — probably wolves — are rampant, and their upturned mouths hold a serpent's head. The short, plain space beneath them has a horizontal line of circular perforations, and the teeth are nearly perfect. This very fine comb is from Honeoye Falls, and in the Hildburgh collection. The length is 10¼ inches, and the teeth are 1¾ inches long. It is much reduced in the plate. The owner kindly furnished blue prints of his relics. In Mr Hildburgh's collection are three other good examples, all somewhat broken, and all from the same site as the last. One has a man standing behind and probably laying hold of a rampant animal whose head is gone. One has two bears rampant, and in this only the teeth of the comb are missing. Another has an animal standing with the head turned back over the shoulder. The teeth and tail of this are broken.

A few others may be mentioned. The writer found a broken one at the recent site overlooking Wagners hollow in Montgomery county. It had teeth at both ends and two perforations. This was in 1889. On the same spot he found a thin, flat bone, nearly square and well dressed, the front and edges being smooth. It was 2½ by 2 inches. Slight cuttings had been made at one end, preparatory to forming a comb. On the same spot were copper saws used in this work. A straight piece of sheet copper was selected, and fine teeth were cut in this with a file, making a serviceable implement.

In the Richmond collection is an unfinished comb from Rice's woods, which has a central perforation, short teeth at the broad end, and three notches at the narrow.

In the Dann collection are a number of combs, and among them is an unfinished one of much interest. The teeth have been finished and afterward broken, and the full outline has been formed. There are two excavations and some lines. The unfinished design seems to have been that of two turkeys with raised heads. It is interesting as showing that these were actually made in Iroquois villages of the last half of the 17th century. Two of these have quadrupeds rampant, two on each comb. Another has two birds, and still another two bears in the same position. One has a human bust, and all are more or less broken.

It is curious that, while so many have come from the old villages of the other four nations, not a single specimen has the writer seen from an Oneida village, and but one broken specimen from the Oneida territory, which is double as regards teeth. They must have been used by the Oneidas with the other Iroquois, and probably some have been found. It suggests the danger of rash conclusions from negative testimony. What has not been reported or found, may have existed and been used.

Pipes

It is barely possible, but hardly probable, that pipes of bone and horn may sometimes have been used in prehistoric times. These materials are combustible in a limited degree, and the burning tobacco would certainly have had a new flavor in a bone pipe, while the latter would soon have lost form and substance. This difficulty was obviated, at a later day, by lining the bowl with a thin sheet of metal. The question then arises whether any early article in the form of a pipe bowl did not have some other use. But for this action of the burning tobacco on the bone, there would be no hesitation in calling fig. 204 the bowl of a pipe. It is hollow within, and has a lateral perforation near the base, just as in pipes of which there is no question. For these reasons it is temporarily placed here, though its proper position may be with the bone whistles, which it resembles in form. It is four-sided, nicely worked, and has a human face scratched on one side. In fig. 203 the lateral perforation is near the broad end, and the larger cavity goes through the bone. No one will hesitate to call this a whistle or tube, though so near the last in appearance. The one before described is from the Atwell fort; this is from the Christopher site.

It has been suggested that fig. 154 may have been designed for a pipe but not completed, and this would be the writer's opinion but for this manifest difficulty in early use. In the state museum, however, is a bone pipe procured by Mrs H. M. Converse in Canada. The Indians there considered it an antique, but it clearly is a modern form. The metallic lining has disappeared, and it seems to have been used after this. The spiral grooves which held the metal in place still appear. On the top of the stem are nine crosses which were made by one hand, and are not mnemonic. It is a rare article, however, even in a modern form.

Fig. 159 is a very fine example of a pipe made from a large antler, which belongs to the writer, and which is probably a little over a century old. It retains the metallic lining in the bowl, without which no pipe of this material could be used. Its history is a little obscure, but it belonged to an early Onondaga pioneer, and was probably made by an Indian of that county. All the prongs but the basal have been cut off, and the bowl is in the cavity between that and the main branch. The carved lines have been filled with red or blue paint, and the holes and some other parts are edged with red. There are numerous perforations, as may be seen. The antler was split from the tip down to the bowl, and the unpolished side painted with Indian red. The stem is made of some light wood, with five encircling bosses, inserted in the stem hole at one end, and tied with buckskin near the other. This is about 14½ inches long, the figure being one half the actual dimensions each way. The chord of the arc of the antler as it is, is 11½ inches. The antler was an extremely large one of the Virginia deer. It is a very fine article, and probably absolutely unique.

For the reasons given, bone and horn pipes are among the rarest of Indian articles. That they might have been used 250 years ago is not impossible, but probably all made 150 years ago could be counted on one's fingers. There is probably not one existing for which a date so early can be verified. In speaking of one in the Toronto collection, Mr Boyle said: "Pendants and even pipes were made from bone. The last class of bone objects, it should be said, is very seldom seen. Only one has come into our possession so far, and it may have been a makeshift." *Boyle*, p. 76. This is a hollow bone, about 2¼ inches long, with a central perforation in the side.

Chisels and gouges

Fig. 13 is a small bone chisel, the locality of which is not certain. It probably came from the Atwell or the Nichols pond site. It is sharpened at the broad end and was in the Ledyard collection. Fig. 94 is a bone chisel from the Mohawk valley, and is in the Richmond collection. It is thick and broad, and is sharpened at both ends. Fig. 93 is like a chisel in general form, but the ends are not sharp. It is well worked and nearly square in section. This is in the Waterbury collection at Brewerton.

Fig. 340 is a long bone gouge from the Atwell fort. A little of the top and most of the base are gone, but it is still 7¾ inches long, being much reduced in the plate. There was probably a point at the top, as well as a cutting edge at the broad end. Fig. 86 is a long and curved bone implement, naturally grooved, but having a perforation at the flat end. It is but slightly worked, but may have been intended for a gouge. It was found by Dr Hinsdale at Brewerton. Fig. 267 was also found by him at the same place, one piece being obtained by him in 1897, and the other the following year. It is made from a walrus tusk, and another implement was found of the same material, which also occurs north of Lake Ontario and the St Lawrence. The gouge is rather rude.

A figure should have been given of a broad bone gouge found by Mr Frey in the graves at Palatine Bridge, and figured and described by him. It is 4¼ inches long and 2 inches broad, and is unusually fine.

Arrowheads

It is the custom to call hollow bone or horn points arrowheads, and they would have served this purpose very well by fitting the shaft into the cavity. Such articles are widely distributed, but nowhere abundant, and could have been used in this way only in exceptional cases. This may be qualified by saying that, if lost in the woods, they would not be preserved, and, however plentiful they might once have been, they would not endure like those of stone. The probability is however that as well finished articles they were little used.

This is not the only form of bone or horn arrowhead. Occasionally we find those made for insertion in the shaft, but these are much rarer than the form just mentioned. Very few have been found. Early writers on America testify to the frequent use of bone, and it is very likely that some things, naturally sharp, were used with little preparation. A merely splintered bone at close range would be very effective. A better point would be needed for a long shot.

In the *General historie of Virginia*, by Capt. John Smith, it is said, "Their hookes are either a bone, grated as they noch their arrowes, in the forme of a crooked pinne or fish-hooke, or of the splinter of a bone tyed to the clift of a little sticke, and with the end of the line they tie on the bait. They vse also long arrowes tyed in a line, wherewith they shoote at fish in the rivers. But they of Accawmack vse staues like vnto Iauelins headed with bone. With these they dart fish swimming in the water." *Smith*, p. 31

Here we are to understand that the long arrow, used in fishing, had a line attached to prevent its loss, while some Indians used a longer and stronger handle, requiring no such precaution.

At a later day John Josselyn said much the same in his *Account of two voyages to New England*. Some fish the Indians took in the harbors, "striking them with a fisgig, a kind of dart or staff, to the lower end whereof they fasten a sharp jagged bone (since they make them of Iron) with a string fast to it, as soon as the fish is struck they pull away the staff, leaving the bony head in the fishes body, and fastening the other end of the string to the *Canow*." *Josselyn*, p. 140

The account suggests the barbed and perforated Iroquois harpoon.

Before considering the many types of the barbed bone harpoon, a few examples may be given of the simpler arrowhead.

Fig. 12 is a good example of the hollow bone point, found by Dr Getman at Perch river in 1899. This is nicely ground and sharp. Fig. 14 is a much larger size, and is of partly polished horn. Like the last, it is nearly cylindric. It was found by Dr Hinsdale at Brewerton. Fig. 22 has been noticed, but some consider this type as arrow points. This is not the writer's opinion.

Fig. 77 is a rare form from the McClure site, Hopewell. It is a triangular bone arrow, with indented base and broken point. The compression of the base serves a double purpose, to sharpen the barbs and affix the shaft. Fig. 78 is from Oneida Valley, and is in the Hildburgh collection. It is thickest in the center, and is not a frequent form. Fig. 79 may be provisionally placed in this general class, since it is hollow and pointed, but the large perforations add new features. These are not opposite, nor is the base cut straight across as in the arrowheads. Its size is another thing, and it may have been intended for a dagger or spear. It is from the Minden or Otstungo fort and is of horn. Fig. 108 is another fine example, smaller, but having much the same character. The base is neatly cut across, but is now gougelike on one side. The implement is of hollow horn, quite sharp, and perforated from side to side. It is not highly polished, and the natural grooves remain at the base. This was found at Brewerton by Dr Hinsdale.

Fig. 304 is a broken and triangular arrow, much like those of flint. It is perforated in the center, has an indented base, and is irregularly worked. Of course it is not hollow. This is from the Atwell fort, and in the Burr collection. Fig. 311 is a horn arrow point, hollow and chipped, and with an indented base. It is in Dr Amidon's collection. Fig. 314 is in the same cabinet, and is also hollow and chipped, but of small size. The base is indented, and the figure might pass for one of flint. Fig. 318 also belongs to Dr Amidon. It is triangular, and both the long edges are sharp. On the reverse it is concave. Dr Getman found a flat and triangular bone arrowhead on the St Lawrence site, Sep. 21, 1901. It is 1¾ inches long and has an angularly shouldered base.

Fig. 323 is a fine hollow, cylindric horn arrow, sharp and polished. It is from an early site near Clifton Springs, and is in the Coats collection. Fig. 345 is a notched horn arrow from Rice's woods. It is rounded, not hollow, and the point is a little bent and obtuse. Most of these arrowheads are of horn.

Fig. 73 is probably a flat bone arrow, of a long, pyriform outline and indented at the base. It is grooved on one surface and merely notched on the other. This polished article was found in the ashes on the *Kaneenda* site, on the Onondaga inlet. In the Waterbury collection is a hollow bone arrowhead, 1⅜ inches long. There is another of these from Clifton Springs, in the Coats collection, and Dr Amidon has a fine one 2½ inches long.

W. L. Calver reported one of these at Cold Spring, Putnam co., and 20 others from a grave on Staten Island in 1895. He also had a hollow horn arrow from a shell heap at Spuyten Duyvil creek. Similar forms are found abroad.

A bone arrowhead from Hochelaga, at Montreal, is figured by Sir J. W. Dawson in *Fossil men*, p. 135, which closely resembles the one in the Hildburgh collection. As Hochelaga was an Iroquois village less than 400 years ago, its articles closely correspond with those of New York.

Harpoons

Few early articles of bone or horn were more widely used than harpoons of various forms. Dr Charles Rau ably discussed and illustrated these in his *Prehistoric fishing.* One remark of his made as late as 1884 may well be quoted here, to show how important have been the acquisitions of the last few years. One barbed hook only had been reported then; now we have many, and the gain in harpoons has been yet more surprising, for most of these are older. Dr Rau said:

> Considering that bone, on account of its toughness, was an excellent material for pointing fishing darts, the comparatively small number of old bone heads thus far discovered in the United States would be surprising, if their scarcity could not be accounted for by their frequent loss in the water. *Rau*, p. 142

That they were lost in this way is certain, for they are sometimes found in the water now, but their destruction by small animals and their rapid decay when away from preservative materials may be more important factors. That more had not then been found was also partially due to imperfect modes of search. Dr Stewart of Lock Haven Pa., in a letter to the writer says of a harpoon found near the Susquehanna river, "It is the only point of bone found in this valley to my knowledge." Yet there are earthworks and village sites in Pennsylvania where the spade might be expected to reveal many. This is a matter to be tested.

Out of 28 bone harpoons figured by Dr Rau from the United States, 16 were from New York, and five from Onondaga county. Several came from the northwest coast. A. G. Richmond in a letter to the writer under date of Nov. 8, 1897, observed:

> I think Dr Hinsdale is doing remarkably. He has an immense number of things in the way of harpoons; the most I ever saw anywhere. I thought I was rich in the harpoon business, but he certainly goes away ahead of me. His are entirely different from mine. Mine are the one-sided ones, one, two and three barbs, all quite large; about 7 or 8 inches long and 1 inch wide. We don't seem to find the double-barbed pieces here. There is one place at Wagner's hollow, where I took you, where a great many of those large, flat harpoons are found. Some of them are broken, but mine are quite perfect and very good indeed.

The site mentioned is a recent one, and the form is that generally used by all the Iroquois in the 17th century. Dr Hinsdale's were mostly earlier forms, collected at two places, though he had them from other sites. A. H. Waterbury was equally successful in collecting at Brewerton. From these and other sources the writer has selected many fine, unique forms, much regretting the neglect of others.

Most European harpoons have larger barbs than those in America, and the Alaskan and Eskimo harpoons are perforated, like many recent Iroquois specimens. One from a mound in Manitoba has barbs only on one side. Eastern forms are found more or less in the western states, but those of California are more like those of Europe. Till very recently most of our bone articles were from California, a fact apparent in the national museum. The Toronto collection is much like that of New York, and the harpoons are the same. Harpoons seem rare in Ohio, but are found on the Madisonville site, which so closely resembles those of the early Iroquois. Its earthenware, however, differs greatly from that of New York. Bone implements are rare in New England, except in the shell heaps of the coast, but some double barbed harpoons have been found on Lake Champlain.

In New York bone harpoons are most abundant where the early and later Iroquois lived. Few have been reported west of the Genesee river, and along the Susquehanna and Delaware they seem unknown. The Hudson river and Long Island seem as barren. Dr D. S. Kellogg says that on Lake Champlain, "bone awls, punches and harpoons are found only in connection with broken animal bones and other remains in some of the fireplaces." These are in the early Iroquois territory, and thus the bone harpoon here seems limited to the drainage of the St Lawrence. Farther explorations may be expected to extend the area. In point of time it is both an early and recent article, with indications of continuity of use over but a brief period. At one time it seemed probable that those with double lines of barbs were much earlier than the larger forms, but both have now been frequently found on sites not four centuries old.

In the following descriptions harpoons will not be classified farther than the natural division of barbs on one or both sides. Both have been found on the same sites and in the same graves. This is the case in Europe. Among the harpoons of the lake dwellers in Switzerland are those barbed on one and both sides. A Scandinavian specimen has barbs on but one. In New York, as a rule, this is a recent form when of a large size.

Fig. 234 is in the Bigelow collection, and is from a grave at Jack Reef on the Seneca river. In this were stone implements, two jawbones of dogs, and a flattened cylindric bone implement. There were also several double barbed ones. Fig. 238 is from the Richmond collection, and is a large and broad harpoon, with a central perforation and but one barb. Its striking feature is a series of short incisions at the base. Mr Richmond thought these were for marking pottery, but thongs of sinew might have been passed through them for attachment to the staff.

Fig. 239 differs widely from the last, and is in the Bigelow collection. There are nine large barbs on one side, and none on the other. The edges are nearly parallel and the barbs long. It came from the bank of Seneca river, north of Weedsport, and is dark brown, like most articles from that place. While generally well preserved, it is cellular on the reverse side. Fig. 242 is in the same collection and of much the same hue. It is from a recent fort partly on lot 8, Fabius, and is much curved the other way. There is but one barb, and no perforation. The lower part is abruptly expanded, as in some Seneca harpoons, and the edges are rounded, the general surface being flat. The barb is sharp and long.

Fig. 243 is a large and curious harpoon, much like a broad knife in outline. In one edge near the base is a large rounded notch, with a perforation lower down. The barb is so far from the point that it may be a knife, or at least have had a double use. It is from the north side of the river at Brewerton. Fig. 244 is of a very different character, and is in the Bigelow collection. It was found on Howland island in the Seneca river, and is triangular in section and highly polished. There are five barbs on one side, but what should be the point is obtuse, while the other end is slender and sharp. Dr Rau has an illustration of a slender one-sided harpoon used in arctic America, in his fig. 98, and describes its use. He quotes from Prof. Nilsson's *Primitive inhabitants of Scandinavia*, p. 33:

On the top of a long pole are fastened two tolerably long sharp-pointed bones, the tops bent a little outwards and the inner side provided with teeth pointing backwards, to hold the fish securely when struck. These bones are fastened to the shaft in such a manner that each, independently of the other, is in some way movable inwards and outwards; their sides are therefore flat at the other end, and the inner edge provided with one or more teeth pointing forwards, in order to be tied fast, so that they can not be torn away by the fish; and, in order to prevent their being bent too much apart, they are tied together by means of a strap at a short distance from the handle.

No long unilateral harpoons have been found here with these basal teeth, nor are they as long as those described by Prof. Nilsson. He adds that "the bone points, in all 11 inches long, are, to a length of 5 inches, fastened to the shaft, and consequently protrude 6 inches beyond it." It was his opinion, too, that these implements were not for spearing fish, but for shooting birds on the wing.

The Canadian Indians used something similar in early days, replacing bone or horn with iron when this could be had. The eel fishery was then of large proportions, and the *Relation* of 1634 describes the spear used in this:

This harpoon is an instrument consisting of a long stick, three fingers thick, to the end of which they attach a pointed iron, which they arm on each side with two little curved rods, which come almost together at the end of the iron point; when they come to strike an eel with this harpoon, they pierce it with this iron, the two sticks adjoining, yielding through the force of the stroke, and allowing the eel to enter; after this they contract again by themselves, because they were opened merely by the shock of the stroke, and prevent the speared eel from escaping.

The description of spearing eels by night, by Indians in lighted canoes, is precisely like that given by travelers in New York a century ago. Le Jeune adds that "some will catch three hundred, and many more, in a single night, but very few at other times." The French accounts of fishing at Onondaga lake far exceed this estimate. When they were there in 1655, Father Dablon said "some take with a harpoon as much as a thousand in a single night;" but then the size of fish stories is proverbial.

Fish weirs were quite generally used by the Indians, not essentially differing from those of the whites. David Zeisberger mentioned six of these between Oneida and Cross lakes in 1753. They were all owned by the Onondagas, though the Oneidas made a claim to one or two of them at a later day. In the unpublished journal of that year Zeisberger tells us of his going from one to another on the Seneca river, Aug. 27. At the eastern one an Onondaga chief explained to him how the country was divided. He adds: "It is plain to be seen that they have much order in all their affairs. For instance, each one has his own place where he is permitted to fish, and no one is allowed to encroach upon his part. A chief is appointed to each fishing place, and he has his people who belong to him." This was necessary, for all parts of a river were not suitable for weirs and harpoons.

Fig. 245 is a harpoon in the national museum in Washington, much reduced, and is here taken from fig. 230 of *Prehistoric fishing*, where it is thus described:

> A fine single-barbed harpoon head of elk horn, in an excellent state of preservation. It measures nearly 10 inches and a half in length, and has a thickness of about half an inch in the middle. The broad lower part shows two shoulders, but its base, instead of being worked thin, is more than ¼ of an inch thick. The head, nevertheless, may have been detachable. This specimen was presented to the national museum, with other valuable relics, by the late W. M. Locke, of Honeoye Falls, Monroe co., N. Y. His son, F. M. Locke, of Rochester, N. Y. informed me by letter that he had found it himself about two miles south of Honeoye, on the old Indian reservation called the Ball farm. "It lay on the surface where there had been a great many camp fires, and the clayish ground was covered with ashes, preserving the spear and other relics that might have decayed, had it not been for the ashes and clay."

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Fig. 247 is in the Bigelow collection, and is a rare form from the Atwell fort. It has one long barb, and is much expanded above the base. It has a high polish, and is obtusely pointed at the base also, which is a rare feature. Fig. 249 is in the Frey collection, and comes from the Garoga fort in Fulton county. It is remarkable in being very slender below the barb, which is long and sharp. Fig. 250 is a long, curved and curious harpoon found in Cayuga county in 1889. There are two barbs on one edge very near the point. Fig. 254 is in the Coats collection, and is an early harpoon found near Clifton Springs. It is of a brownish hue, and has one long and sharp barb. One surface is ridged, and the whole implement is well wrought.

CENTRAL RESERVE

Fig. 259 is a curious example, found by Dr Hinsdale on the nort side of the river at Brewerton. The general form is that of a broad and polished knife, pointed at one end and rounded at the other. The edges are rounded. There are two broad barbs on one side, and one narrow. The latter is not sharpened like the rest, and is formed by a half elliptic notch. The implement is broadest toward the point.

Fig. 268 was found at the mouth of Chittenango creek by Dr Hinsdale, and is blackened by lying in the water. It is a small and neatly made harpoon, with two small, dull barbs near the point. It is widest in the middle, tapering regularly toward the ends. Fig. 329 is as large as the last is small, but is much reduced in the plate. The length is 7⅝ inches. It is from Rice's woods, and has a large perforation and two long barbs. It is a good example of the later Iroquois harpoons. These sufficiently show this class, but a few others may be noticed.

A large broken harpoon, with one barb and perforation, is 7¼ inches long, and comes from the Atwell fort. A recent fine harpoon was found on the site of East Cayuga in 1888, by W. W. Adams, and has appeared in print. It is stained red, has two barbs on one side, and the edges protrude near the base. It is 4¼ inches long, and is shown in fig. 354. In the Richmond collection is a massive unfinished harpoon from the Garoga site. It is 6¾ inches long. In the Frey collection is a broken single-barbed harpoon from the Otstungo fort. In the Vail collection is one which is unfinished and large, being 7¾ inches long. The notches had been begun. In the Waterbury collection is the head of a large unilateral harpoon, with one large and prominent barb. The length is conjectural. Dr Hinsdale found a curious broken harpoon on the island at Brewerton, which seems unfinished. The four barbs on one edge are very distinct, but their thickness on the outside is about the same as that of the whole implement. They have not been sharpened in the least. In the Hildburgh collection is one which is rude and broken. It is 7 inches long, and has six barbs on one side.

Fig. 240 in *Prehistoric fishing* is of a New York harpoon. Dr Rau said of this, p. 150:

> A harpoon head of deer horn, tolerably well preserved but unfortunately broken at the lower extremity. The point and the two barbs are carefully finished; the perforation, sunk in from both sides, is of irregular form. A cross-section above it would form an elongated ellipse with a shorter axis of nearly half an inch. Found by Mr F. H. Cushing in a shell heap in Onondaga county, New York.

Dr Rau goes on to say:

> It probably has been noticed that these pierced dart-heads have all unilateral barbs; those with barbs on both sides, it will be seen, are not perforated, but may also, in part at least, have been detachable. Perhaps it is only owing to accident that none of the bilaterally barbed heads at my disposition is perforated.

This is the writer's experience in the examination of a great number of specimens. But one bilateral harpoon has been submitted to him with a perforation, and of this he had at first some doubts from other unusual features.

In E. G. Squier's *Antiquities of the State of New York*, p. 124, is mentioned "the point of a fish spear, made of the ulna of the deer; found in Livingston county." This appears to be the harpoon which has long been in the state museum, and credited to Avon. It is about 5½ inches long, has two barbs on one side, and a half-circular notch in each edge toward the base.

A somewhat rare form of harpoon has the ends alike, with barbs pointing both ways. The natural thought would be that this provided for accidents. If one end were broken the other might be used. Another purpose has been suggested, to which this might be contributive at least. In *Cave hunting*, p. 111, W. Boyd Dawkins figures a double-pointed harpoon from the Victoria cave, Yorkshire, Eng. There are three barbs on each edge, but two of these turn one way, and the other in an opposite direction. Of this implement Mr Dawkins said:

> The harpoon is a little more than 3 inches long, with the head armed with two barbs on each side, and the base presenting a mode of securing attachment to the handle, which has not before been discovered in Britain. Instead of a mere projection to catch the ligatures by which it was bound to the shaft, there is a well-cut barb on either side, pointing in a contrary direction to those which form the head.

But few examples of this form have been found in New York, and but one has been reported in Canada. Fig. 235 is the smallest which has come to the writer's attention, and this was found by Dr Amidon at the St Lawrence site in 1899. Both ends are pointed. At one end there are two barbs on one edge, and one on the other. At the other end there are three barbs on one edge, and two on the other. One edge has thus three barbs, and the other five. It is expanded in the middle. Dr Amidon found a larger one, on the same site, Sep. 21, 1901. It is 4½ inches long, and has three barbs on each side at one end, and four barbs on each side at the other. Thus far they have been reported from two places only.

Fig. 232 has lost both points, and may have been broken quite near these. At one end a barb remains on each edge; at the other there are two barbs on one edge, and there is one on the other. These are quite sharp. The flat surface is beveled at the edges. This is in the Waterbury collection, and was found at Brewerton. Fig. 263 was found at Brewerton by Dr Hinsdale, and is a perfect specimen, suggesting the use of the more distant barbs for attachment. At one end the bone forms an expanded angular head, with two barbs at some distance from this. The other end may be the true or primary point, with several barbs close to it. The upper side is mostly the natural surface, but the lower surface has also been smoothed. Fig. 321 is another fine example in the Waterbury collection, of which the lower side is here shown. This has been smoothed down, but shows the structure of the bone. The barbs are less prominent at one end than the other, but equally sharp. The larger barbs seem near the primary point.

Fig. 233 was found on the island at Brewerton by Mr Waterbury in 1899. It was with a skeleton. The point is obtuse, and the three barbs on each edge are very prominent. The general form is flat and broad, with a ridge on one side. Fig. 231 was found with fig. 234, and is in the Bigelow collection. It is flat, and beveled at the edges. The writer furnished figures of these two and another, to Dr Rau. They are fig. 229, 247 and 248 of *Prehistoric fishing*, and were found in a grave on the Seneca river. Fig. 266 was also found in a grave at Jack Reef, on this river. Several were with it, which were utilized in husking corn. One long and broken one had many barbs on one side.

Fig. 236 is one of many similar examples in the Waterbury collection. They are usually a little ridged, often broken, and with many small and irregular barbs on both sides. Fig. 237 is a rude harpoon found on the site near Pompey Center. The barbs are mere projections, and of unusual form. Fig. 240 is large for a bilateral harpoon, and has three barbs on each edge. It is of horn, and the natural hollow is preserved, the edges of this being neatly worked down. This was found by Dr Hinsdale on the island at Brewerton.

Fig. 241 is of unusual form, and was found by Dr Getman near Chaumont. It is a thick harpoon head of bone, with a single and large barb on each edge. The base is rounded, and the article perfect. Fig. 246 is in the Waterbury collection, and was found by him in 1899. It is nearly flat and very long. Three barbs on each edge are very near one end. Fig. 248 is in the same collection, and is a fine bone harpoon of unusual form and well preserved. The surface is flat and beveled on each side. The slight and sharp barbs are quite far apart, and the point of the harpoon is very keen. Fragments of these are found, but few good specimens.

Fig. 251 was found north of the river at Brewerton by Dr Hinsdale. It is very long and flat, with many sharp barbs crowded near the point. There are six of these on each edge. It expands from the point to the base, which is nearly an inch wide. Across this are shallow cuts, as though it had been intended to make the base square. Fig. 252 was found by the same person and in the same place. It is about the same length as the last, but narrower. The barbs are different, and there are four on each edge. The edges of both are rounded.

Fig. 253 is a fine bone harpoon, of unusual form for an Iroquois site. It is in the Dann collection at Honeoye Falls. There is a single barb on each side, both having a slight indentation half way from the point. From the notch below the barbs there is a gradual expansion to the rounded base. It is of a flattened form. Fig. 255 is a curious little bone harpoon, found by Dr Hinsdale on the Christopher site. There are four rounded or obtuse barbs on one edge, and five sharper ones on the other. It is a little ridged on one surface, polished on both, and with an outline much curved. Fig. 256 is a small, pointed implement of horn, from Indian Castle in the town of Pompey. Midway on each side are three notches, which may have served for barbs, or for attaching this little implement to a handle. Fig. 257 is a bone harpoon found by Dr Hinsdale at Brewerton. It has the frequent flat surface, angularly beveled down to each edge. The barbs are made by mere sloping notches, and may be unfinished. They are serviceable as they are, but would be improved for use by cutting from the point of each barb to the base of the notch above. The base is broken, but seven barbs remain on each side. Fig. 258 was found by Dr Getman at the mouth of Perch River bay. It is a thick, rounded bone harpoon, with three sharp barbs on one edge. On the other the third barb has been broken, and then recut into two smaller ones. The original barbs on that edge are very sharp.

Fig. 260 is in the Waterbury collection, and is an unusually broad form. The figure shows the concave side of the bone. On this side it was customary to smooth the edges and grind down the point. If the bone was flat, much of the natural surface would be left on the other side. This has three sharp barbs on each edge, placed well apart.

Fig. 262 is in the Richmond collection, and is one of the prettiest bone harpoons yet found in New York. It came from an early site on Farley's point, Cayuga lake, and is polished all over and brought to a point at each end. It is very slender, and has six barbs on each edge. It is also slightly ridged. Fig. 264 is another bone harpoon with crowded barbs, from the Waterbury collection. It is moderately flat, but follows the curve of the bone. There are seven barbs remaining on one edge, and nine on the other. Fragments of about this size are frequent. Fig. 265 is in the same collection, and is well worked. It seems to have been a harpoon cut down to make an awl, but may also be supposed to be a harpoon in process of formation. The former is most probable. Fig. 277 is a bone harpoon found by Dr Hinsdale. The base is broken, but three peculiar barbs remain on each side. The point is rounded and the work good.

Fig. 270 is a fine bone harpoon in the Bigelow collection, which came from the Christopher site. There is a large barb on each side, and the base is rounded. The shaft is much narrower than the barbs. Fig. 308 is a bone harpoon found by Dr Amidon in Jefferson county. It is a rather flat and long piece of bone, worked on the under surface below all the barbs, of which there are four on each edge, small but very sharp. On one edge a barb was commenced and broken off. To correspond with this none was attempted on the other edge opposite.

In the Waterbury collection is a large and flat bilateral harpoon which has been broken. Some sharp notches make the barbs. All the harpoons and most of the bone and horn articles in this collection are from Brewerton. Dr Hinsdale found there a horn harpoon, much dilated in the center, and with two barbs on each edge. It was 4⅜ inches long, with a central width of ¾ of an inch. His best harpoons were from Brewerton, but he obtained many broken ones from Onondaga lake. The conditions there were not favorable for fine specimens.

Fig. 320 is a perfect and ridged harpoon, found by Oren Pomeroy in the pit at the St Lawrence site. It is worked also on the flat side, and there are three barbs on each edge. In the Woodworth collection are many of the harpoons of Jefferson county, with barbs on one or both sides. A bilateral one ends in a sharp awl at the base, which is an unusual feature. Some are indented, and are not strictly barbed. Dr Rau's fig. 241 is a harpoon from Ontario county, N. Y., presented to the national museum by Col. E. Jewett, which is about 4¼ inches long. He describes it as "a dart head with three small barbs on each side, so placed that they alternate. The upper side is rounded; on the lower one the cavity of the bone reaches from the broken lower end to the lowest barb." It is a characteristic New York harpoon, few of which he had seen, and he adds in his usual cautious way: "I would not venture to say more concerning the use of this dart head, than that it was probably employed in the fish hunt." *Rau*, p. 150

Dr T. B. Stewart sent the writer a good figure of the only harpoon of which he knew in the Susquehanna valley in Pennsylvania, nor have any been reported from that drainage in New York. It was 4 inches long, with sloping linear incisions, as though unfinished, and was found in 1898. He wrote that it "is in section triangular, and barbed on two edges; the other side is smooth. It is well preserved." It is not very wide, and the edges are nearly parallel.

Fig. 269 is in the Bigelow collection and from the Christopher site. Its unusual character led to special care in verifying it, and the finder was willing to make an affidavit regarding all circumstances. The barbs, if they may be so called, are of unusual form, though such have been found in less pronounced examples. They are pointed protuberances, having nothing of the usual slant, and yet intended to retain the hold obtained. This kind of barb is found at Brewerton. There is a perforation near the base, of an elliptic form. This is a frequent feature at this site and those of corresponding age, in unilateral harpoons and other articles, but not belonging to American bilateral harpoons. The material is horn and therefore antique. There is no appearance of alteration after it was made. This is frequent where early articles of value have been broken, leading to repairs and farther use by the aborigines. This has the original character, and the work does not differ from that of accompanying articles. The evidences of its age have been duly weighed and are decidedly in its favor. The surface shown is smooth and follows the natural line of the material. The other surface is concave and has been a good deal worked. Fig. 352 is in the same collection, and from the same place. It is a thick unilateral harpoon with a single barb, and is much weathered. Fig. 355 is in the Waterbury collection, and has the barbs but slightly developed. Others of this variety are found at Brewerton, where broken implements often have odd features. Fig. 350 is from the Christopher site and in the Bigelow collection. The general outline suggests a flat and rather thin harpoon, with two obtuse barbs on one side and two on the other. It is sharpened to a broad edge at the point.

Fishhooks

In 1884 Dr Rau published accounts of a series of 11 hooks of bone found east of the Rocky mountains, ending with a figure of the only distinctly barbed hook of this material then known. It was furnished by the writer and was then supposed to be of horn, but later examination proved it bone. The first of the series was a simple bone hook from Dakota, apparently not old. It had neither barb nor terminal knob, and is of a type found on historic sites in New York, as well as those but little older. A corroded one from the Madisonville site in Ohio is older in appearance than others from that place, but this is the result of position rather than age, as may be seen from Dr Rau's account of another with a well cut groove at the top. It was found at the same place. He said: "This hook presents a perfectly fresh appearance, being almost white, and is of excellent workmanship and well polished." *Rau*, p. 127. Another from this spot was perforated at the top — a rare feature. Hooks seen by the writer from that place in general can not be distinguished from similar specimens in New York. There is little reason, from the form, to call any of them old. Other things suggest age. Three out of the 11 hooks were from New York, and other types have been added since.

Dr Rau did not class Schoolcraft's bone fishhook as a barbed hook, though it certainly suggests this. The latter writer said that it was found within an earthwork on Cunningham's island in Lake Erie, and added: "Within these inclosures have been found stone axes, pipes, perforators, bone fishhooks, fragments of pottery, arrowheads, net sinkers, and fragments of human bones." *Schoolcraft*, 2: 87

Soon after furnishing this figure to Dr Rau, the writer himself found a sharp and well preserved barb broken from a hook. Then the figure of another was sent to him from Jefferson county; then he met with a large one at Toronto, and since then several of the barbed hooks have been found, mostly in the Onondaga territory. While they suggest a knowledge of the white man's arts in their barbs, it is a curious fact that all which can be dated are older than the period of colonization, though well within that of discovery. Those without barbs are both older and more recent, and of course sometimes contemporaneous with those having barbs.

In making a hook, the method was peculiar. With rude tools there was much danger of breaking, and this was carefully guarded against. A piece of bone was brought nearly down to the required dimensions for one or two hooks, and then ground to the desired thickness. Then work began on the inside by boring and cutting. The superfluous material was thus removed and the inside of the hook formed. Most of the outside could then be fashioned in the same safe way, the critical point being the cutting away of the last outside support. Thanks are due to C. L. Mills, of Columbus O. for photographs of relics showing this progressive work.

A perfect series can not be given with New York specimens, but some may be shown of a distinct or conjectural nature. Fig. 85 was probably an ornament, but will serve to show how a hook might easily have been formed from it, had not the perforation been carried so far. Fig. 227 may also have been designed for an ornament, but may have been blocked out for a hook. In that case the cutting would have been from the half-circular notch downward till the point and curve were formed, and then upward along the shank. Almost to the last there would then have been a firm piece to hold it by. Dr Hinsdale found this on the island at Brewerton, where perfect hooks of about this size were obtained. Fig. 229 better illustrates the usual process, and has nearly the same outline as the last. It is in the Buffalo collection. A hole has been drilled toward the base, and from this grooves have been commenced for forming the point and shank. Fig. 230 is in the same collection, and may have been designed for either a large or a small barbless hook. The intended point seems to have been broken off, causing a change of plan.

Fig. 343 is from the recent fort near Pompey Center, and is a puzzling article if it is to be considered one which had been completed and then broken in using. It might have been a shuttle, had such an article then been in use, but this is unique in form and size. It is therefore suggested that the plan was to make two large hooks from one piece, dividing them in the center when sufficiently advanced. Unfortunately for this, it was broken at one end, perhaps in the mad license of the feast of dreams, perhaps in some accidental way. The curve of the hook is plainly seen at that end, while the work at the other is very suggestive. This article is reduced with the others on this plate, and is 7½ inches long. For its length it is quite thin.

Most of the completed bone hooks are arranged on one plate; and for this reason fig. 313 will be mentioned first, being also of uncertain locality though owned near Syracuse. It is much more massive than any others reported in New York, is without barbs, and has a slight groove at the top. It is also less angular than usual, and probably is much more recent than those which follow. The writer now definitely learns that it came from Michigan.

Fig. 209 is one of those published by Dr Rau, being his fig. 189. Like all the others, it is of actual size. Dr C. C. Abbott also gave the same figure in his *Primitive industry*, at an earlier day. It was found by W. Wallace Tooker in a shell heap near Sag Harbor. No others have been discovered on Long Island, and it is the largest bone hook yet obtained in New York. This is grooved near the top, forming a neat head, and the curve is well rounded inside. The basal curves, however, come to a point, greatly increasing the strength of the implement there. In this respect it is unique.

Fig. 210 is in A. G. Richmond's collection, and came from Richmond Mills in Ontario county. There is a recent site there. It is small, very angular, and without barb or knob, though the top is slightly curved. Fig. 213 belongs to Dr A. L. Benedict of Buffalo, and was found east of that city. It is thick, but quite small, and has neither barb nor knob. Fig. 226 is in the same collection, and was found at the same place. It is small, thick and very angular, and has a prominent head.

Fig. 217 is from Dr Rau's fig. 186, representing a barbless hook found by F. H. Cushing in the Shelby fort, in Orleans county. Dr Rau says:

> It is made of deer bone, and beautifully polished, especially at the point. The shank expands a little at the upper end, where there are some slight grooves. Viewed horizontally from the lower end, this hook shows in a slight degree the cavity of the bone. It was discovered in an accumulation of debris, 18 inches below the surface, near the center of an old circular earthwork. . . With it, Mr Cushing informs me, occurred various other remains, such as broken bones of animals, rudely ornamented potsherds, flint implements, awls, spatulae, portions of weapons and ornaments of bone and deer horn, shell and stone beads, etc. *Rau*, p. 125

This is the fort which some have argued is 7000 years old. The mention of spatulas suggests those of Jefferson county.

Fig. 218 is in the Buffalo collection and from a site on Buffum street. It is quite small, and the shank is nearly double the thickness of the rest of the hook. It is of the simplest possible pattern.

Fig. 220 is in the same collection and from the same place. It is large for this form, and slightly expands toward the top. Toward the point it is quite thick.

Fig. 219 is from the Atwell fort, and therefore not far from 300 years old. It is in the Burr collection at Cazenovia, and is both small and simple. Its importance is in giving a date to these simple forms. Fig. 223 is in the state museum, and is from Genesee county. It is small, angular and slender, and has no barb or knob. A broken one was with this. Fig. 228 is from West Bloomfield and in the Hildburgh collection. It is quite slender for its size. Two more are in the same cabinet and from the same place, one being broken. These are also quite recent.

Fig. 224 is a broken hook found by Dr Hinsdale at Brewerton. It has a projection at the top, but its great interest is in showing part of the initial perforation near the curve. This proves it to have been broken in making, which is hardly a matter of surprise when the crosscuts at the base are observed. The writer found one of about the same size and as much broken, on the fort site west of Baldwinsville. It can not be determined whether either of these had barbs, but there are good reasons for thinking they did. Fig. 225 is a large, sharp barb from a fort opposite the last mentioned, and south of Seneca river. It indicates a hook of very large size and fine form. The writer sent this to Dr Rau after his work was published, and he adopted the same view regarding its character. The site was probably occupied after the middle of the 16th century.

Fig. 214 is the first barbed bone hook reported in New York, and is a fine and perfect specimen, long in the Ledyard collection and now in the state museum. It is wider than any fish hook yet found, and came from the Atwell fort. The writer was so surprised at its character, when he first saw it, that he took special pains to verify the find. Dr Rau's figure is from his first drawing, made at Mr Ledyard's house; this one was made not long since, when it was for some weeks in his hands. It is of bone, and not of horn, as first supposed. This site is usually dated at about A. D. 1600, and other things there show the influence of white men's implements, though there are no examples of their work or materials.

Dr Rau said of this fine article:

> The figure, representing a deer horn fishhook, is copied from a drawing kindly sent by the Rev. W. M. Beauchamp of Baldwinsville, Onondaga co. N. Y. This specimen was found, in 1880, by a laborer on what is called the Atwell site, in Pompey township, Onondaga (or Madison) co. N. Y., and is in possession of Mr L. W. Ledyard, of Cazenovia, in Madison county of that state. The hook being provided with a barb, Mr Beauchamp thinks that it was made, in imitation of the European fishhook, by an Onondaga Indian in the 17th century. There was an earthwork and ditch on the site, which has yielded deer horn forks or combs, bone punches, awls of deer horn, clay pipes, some of them exhibiting curiously intertwined human faces, pottery with human faces at the angles of the rims, and many other objects. The specimen here figured is the only regularly barbed fishhook of aboriginal manufacture known to me, and Mr Beauchamp's view as to its recent origin appears very plausible. *Rau*, p. 128

This fort belonged to the Onondagas, and has been ascribed to lot 44, Pompey. It is really just east of this in Madison county, and was apparently occupied at the end of one century and the beginning of another. The general character of this fine article is much like that of the old Kirby hook.

Fig. 211 is a hook which J. S. Twining bought of a boy named Pryor, who found it 3 feet deep in ashes on Dry hill, some miles south of Watertown N. Y. It is a large, fine hook, with a peculiar barb, and a knob at the top of the shank very neatly rounded. The Twining collection is now in the state museum. Brewerton has furnished several fine barbed bone hooks, described in this paragraph. Fig. 212 is the largest of these, and is in the Waterbury collection. It came from a fireplace on the island, and is narrow for its size. The barb is not sharp, and the top of the shank is a little thickened. Fig. 215 was found on the north side of the river by Dr Hinsdale. There were fish bones in the ashes with it. It is nearly flat, and the slight knob at the top has been broken off. Fig. 216 was found with this, and is a little larger. The sloping and small knob at the top remains. In both these the shank tapers to the top, and they probably had the same maker. Fig. 221 is in the Waterbury collection, and was also from the north side of the river. The barb and interior curve were mainly formed by the large perforation, leaving two straight lines to be cut to this. The shank gradually expands upward, and then quickly contracts into a groove, above which is a small and thin head.

Fig. 222 is a curious and unique hook from the St Lawrence site in Jefferson county, where it was found by Dr Getman in 1899. It is large, and the shank is very much curved, which is a rare feature. Another distinction is made by two deep notches on one edge near the top. This site is of uncertain age, but was in the early Onondaga territory, whence all barbed bone hooks have thus far been reported. It is probable that a period of 50 years will include all these, and possibly much less. The bone hooks of all kinds here described are from Onondaga or Seneca territory, except the one from Long Island, yet it seems proper to credit Mr Cushing's hook and those from Buffalo to the Neutral nation, which occupied that territory at an early day. None have yet been reported from Oneida or Cayuga sites, but Mr Van Epps saw some hooks from an early grave 5 miles northwest of Schenectady.

The Toronto collection has the largest barbed bone hook which the writer has seen. It is 3½ inches high and has a very long barb. The shank gradually contracts toward the top, which has a distinct head. This was found in Lindsay Ont., Can.

Fig. 101 is a bone frequently found on the Atwell site, which suggests a hook. It shows little work, and was probably not used for this purpose.

Most European hooks figured in Keller's *Lake dwellings of Switzerland* are quite unlike those of New York, and those found in California are also of a different type. Early writers take notice of simple forms near the Atlantic coast, which may have been suggested to the natives by the gifts of earlier navigators. Those thus far found in New York may confidently be referred to gifts of this kind. The Madisonville site, in Ohio, has the simpler forms and is of supposed early date, but nothing has been reported thence which distinguishes it from an Iroquois village of the 16th century except the pottery, and even then pottery with handles occurs in New York. The hooks themselves certainly suggest that period, and it may have been an outlying Erie town, though usually considered a mound builders' cemetery.

That these hooks, wherever found, are due to some knowledge of

Europeans, may farther appear from accounts of early and recent Indian fishhooks. Sagard published his accounts of the Hurons in 1636, and described their ways of fishing.

> We found in the bellies of several large fishes hooks made of a piece of wood and a bone, so placed as to form a hook, and very neatly bound together with hemp. *Sagard*, 3 : 588

Mackenzie traveled in northern Canada in the latter part of the 18th century. He said that the Slave and Dogrib Indians "manufacture their hooks from wood, horn or bone." *Mackenzie*, p. 37. The same writer said, in describing the Indians of the Peace river district, "Their hooks are small bones, fixed in pieces of wood split for that purpose, and tied round with fine watape." *Mackenzie*, p. 206. This was a thread made of small spruce roots. The hook itself is that of the early Hurons.

John Ogilby wrote of the New England Indians in 1671 : "They then had *English* Hooks and Lines, for before they made them of Hemp, being most curiously wrought, of stronger Materials than ours, and hook'd with Bone-Hooks." *Ogilby*, p. 157. Kalm said of the Indians of New Jersey :

> The *Indians* employ hooks made of bone, or bird's claws, instead of fishing-hooks. Some of the oldest *Swedes* here told me, that when they were young, a great number of Indians had been in that part of the country, which was then called *New Sweden*, and had caught fishes in the river *Delaware* with their hooks. *Kalm*, 1 : 345

This was in 1749. The assertions or inferences are that the native bone fishhook did not resemble that of Europeans.

Needles

The bone needles of Europe differ from those of the eastern United States and Canada, being usually perforated at one end, and quite sharp at the other. A few have a central eye, and some California examples resemble these. Ours are flat and thin, often rounded at the ends, and have one or two holes near the center. They could have been used only in some coarse work, and might well be called bodkins. It is probable that for finer stitching the bone awl was used, as a shoemaker uses an awl in leather, and that the hemp or sinew thread was carried through the hole as his is now. His is the survival of an early art.

In accordance with general usage, this slender and fragile implement will receive its common name here, bearing in mind the fact that all our own needles are not alike. We have those for knitting, netting and sewing, and even a needle which is true to the pole. Originally and practically the name meant something slender and pointed. The Onondagas now term the common needle *kine-wäh a-ne-hong-wah*, nail or iron that you sew with.

Of needles and their uses Mr Morgan said:

> A small bone near the ankle joint of the deer, has furnished the moccasin needle from time immemorial; and the sinews of the animal the thread. These bone needles are found in the mounds of the west, and beside the skeletons of the Iroquois, where they were deposited with religious care. This isolated fact would seem to indicate an affinity, in one article at least, between the Iroquois and the mound builders, whose name, and era of occupation and destiny are entirely lost. *Morgan*, p. 360

The mere use of bone needles would here prove nothing, for that is world-wide. It must be shown that others used the peculiar Iroquois form, which thus far seems doubtful.

Mr Morgan mentioned other needles. In making the Iroquois burden strap, he said, "the braiding or knitting of the bark threads is effected with a single needle of hickory." *Morgan*, p. 365. The stitching of canoes with bark twine or tough splints was of a ruder nature.

Mr Tooker has not found bone needles plentiful on Long Island, yet he had some from a *Hogonock* site near Sag Harbor, and says: "In a space 10 feet square, I found five bone needles," accompanied by articles of stone. In his Brooklyn address he used this name. In Rau's *Prehistoric fishing* he called them perforators. They occur on the site of Hochelaga, at Montreal, as might have been expected, and in Canada north of Lake Erie and Lake Ontario. They are found on the Madisonville site in Ohio, if the name is applied to the Iroquois type, but how frequent they are elsewhere in that direction is uncertain. Dr Rau figured none in the collections of the national museum. However they may have been used by others, they were still an Iroquois implement far within the historic period. This would argue a use for which the steel needle was not required. The perforations show that the thread used was not of a large size, and Indian women were expert in making fine thread. For some uses sinews were required, and for coarse work the inner fibers of bark were used, but the writer has seen very fine Indian thread made from wild hemp, and twisted by merely rolling on the thigh.

Mr Van Epps reported a bone needle which he found at the early Cayadutta fort. It was notched at the head, and had grooves on each side between the eye and the head. It may be that this one had two holes and was broken at one, causing the notch. Perfect specimens have usually two points and a central perforation. One long needle in the state museum, is credited to Fort Hill, probably near Leroy.

John B. James reported two fine bone needles from Van Cortlandt park, in *Popular science news* for August 1896, and April 1897. They were 5¼ inches long, a very large size, and one was grooved in the eye, a frequent feature, probably resulting from the wearing of the thread.

Fig. 72 is a needle in the Dann collection at Honeoye Falls, and of the latter part of the 17th century. It is thin and a little curved, and is sharper at the ends than is usual. There are two small perforations quite close together and near the center. These are united and crossed by a narrow groove made by the thread. Fig. 109 varies from the typical form and is in the Waterbury collection. It is much thicker than is usual, has the perforation toward the broadly rounded end, and is broken at the other. As it tapers slightly toward the broken end, it may have been a perforated awl, and this is quite probable. Supposing it to have this character, it may be compared with fig. 7. Fig. 117 is part of a very long and slender needle from the Atwell fort. It has been broken at the perforation, and, if this was central, it would have had a length of nearly 7 inches. Fig. 118 shows one of two thin, flat and highly polished needles found by Dr Hinsdale on the island at Brewerton. Both were broken at the eye, and the remaining point is quite sharp. They were 3 feet deep in the ashes. Fig. 119 is in the Bigelow collection, and is a broken needle from Pompey. This has been broken beyond the eye, and the point is rounded. It is quite thin and a little curved. Fig. 120 has also a round point, and was found by Dr Hinsdale on the Sheldon fort in Pompey. It has been broken at the eye, and has the usual flattened form. Fig. 123 is a flat and curved needle, found by Dr Amidon on the St Lawrence site. The ends are well rounded, and the perforation is not central. It is a fine and perfect specimen, though not a long one. Fig. 279 may be called either an awl or needle, having some features of each. It is sharp at one end and obtusely pointed at the other, but has a central perforation, slightly grooved across. It is wide for a needle, and is highly polished. This is from Pompey, and in the Bigelow collection. Probably it should be placed with the awls but may have had other uses. Fig. 280 is in the same collection and from the Christopher site. It is a long and slender needle, sharp at one end and with a rounded point at the other. The perforation is longer than usual, and probably enlarged by use. The groove which crosses it shows how constant was the wear. Fig. 281 is shorter and not so slender, but has much of the same character. These needles are usually flat on one side and a little rounded on the other.

Fig. 284 is from the Atwell fort, and may be an unfinished needle, lacking the proper points and perforation. It is thin and flat, and is somewhat curved. The edges are nearly parallel. Fig. 309 has a similar character. The thickness and curve are shown, as well as the flat surface. One end is pointed and the other left unfinished. In its present state, there is no perforation, but there can be no doubt that it was designed for a needle. This is in the Bigelow collection and from the Christopher site.

Fig. 324 is in one way unique, having one side straight and the other curved. The remaining point is also quite sharp. It was broken at the original perforation, which the groove shows was long used. Then a circular hole was drilled more toward the point, thus making a nearly terminal perforation. This had been scarcely used at all. It is in the Waterbury collection, and is half round.

Very few are perfect, as they are thin and narrow at the outset, and the perforations necessarily weaken them. Use increases this weakness, and they commonly gave way there. Broken forms, however, sometimes have special features, and are at least valuable in showing dates and distribution. Fig. 121 has already been mentioned as unique in form whether classed as awl or needle. It is probably the former, being quite broad. A Mohawk bone needle is 3¼ inches long, and is quite wide in the middle, where there is the usual perforation. A round-pointed needle, broken at the eye and still 2½ inches long, comes from the island at Brewerton. Some with two eyes are broken at both. They occur on many sites and in many collections, but are often overlooked from their inconspicuous character.

Fig. 351 is a good example from the Christopher site, in the Bigelow collection. It is of bone, convex on one surface and concave on the other. Having been long in use, the point has been sharpened as occasion required. The other end is not now pointed and may never have been, though this would be unusual. It is cut squarely across, and this seems the original design. That half also does not follow the plane, as in most needles, but curves quickly out of the line.

Spoons

Iroquois spoons were usually made of wood, but a few have appeared that were formed of bone, horn or metal. Every man was expected to have his own, and to carry it to any feast to which he might be invited. Small sizes were provided for children, and larger for old people. They were broad, shallow, and often of quite a large size. The writer has seen an old Indian friend eating with one not less than 6 inches wide. Such a one may have given name to a noted Mohawk chief of 1660, who was called *Adaquatho*, or Big Spoon.

The Eskimo use horn dippers and spoons. Horn spoons were found in a grave in Windsor Ct.; and bone spoons were among early New England articles. Few have been found in New York, but some wooden and metallic ones have been taken from graves.

Fig. 134 is of bone, and was found on a recent site in Cayuga county, in May 1888. The handle is straight, on a plane with the bowl, and the whole article much like those made of wood. The latter, however, have the handle more at an angle, and generally carved in some ornamental design at the top. Fig. 344 is more like the usual forms in its curves, and is made of horn. It is reduced in the figure, and is a little over 7½ inches long. Viewed from the side, it shows a double curve, and the handle has several notches on the under side, near the top. This was found near Fort Brewerton, and was shown by J. H. Horton at the Onondaga centennial exhibition.

Whistles and phalanges

Phalanges of deer abound on early village sites, often more or less worked. Many of these have a longitudinal and a lateral opening, and are commonly classed as whistles. Some have a single long perforation, and were probably used as ornaments. Others have a lateral perforation at one end, plainly intended for suspension. The writer has hesitated whether to separate these according to their supposed uses or to place them together according to their natural and slightly altered forms. The latter course is the least difficult and will be followed in this case, some reference to this being made on a later page. Most of the phalanges were probably used in a kind of cup and ball game, as they still are by some Indian tribes. The perforations served to connect them when so used. The common name of bone whistle has been retained here.

Fig. 142 is a neat article of this material, without lateral perforation, but with the ends cut in notches and polished. It was found by Dr Hinsdale at Brewerton. Fig. 203 is worked all over, and has a longitudinal perforation, and a lateral hole near the broad end. The form is like fig. 204, which has been already described as a bone pipe. The essential differences are in its being bored from end to end, and in having the lateral hole near the top instead of the bottom. It is from the Christopher site, and is in the Bigelow collection. The notch crossing the base does not show in the figure.

Fig. 205 is from the same place, and in the same collection. It is of the same form, but is smaller, and is very nicely worked. A scallop ornament of dots crosses one end. It is perforated throughout. Fig. 206 is a slightly worked deer phalanx, found by the writer at the Atwell site in 1896. It is perforated for suspension at the small end. Fig. 207 is a large phalanx, deeply notched each way at one end. This is in the Bigelow collection and from the Christopher site. There are abundant examples of these, varying in little things. One from the Garoga fort, in Fulton county, is well worked, and is perforated at the small end. Such forms may have fringed the dress or anklets, as the hoofs of deer and sheep afterward did.

Fig. 102 is a small, cylindric bone whistle, belonging to Dr A. L. Benedict of Buffalo. The lateral orifice is toward one end, and is quadrilateral. Fig. 107 is a short, cylindric bone whistle, in the Bigelow collection. This is from the Christopher site, and the lateral central aperture is circular. Fig. 126 is from the same place, and was found by Dr Hinsdale. It is an angular, tapering bone whistle, with an angular orifice near the small end, and is not a common form.

Fig. 135 is from Rice's woods, near Stone Arabia, and has much the outline of the last, but is not angular. The lateral orifice is oblique and elliptic, and the whole surface is well worked. Fig. 208 is a hollow and polished bone, neatly cut at each end and triangular in section. It is of a deep brown color, like many articles from the Christopher site, and is in the Bigelow collection.

Fig. 326 is in the same cabinet, and is a very long bone whistle, hollow throughout. Grooves for a perforation have been cut nearly through on the opposite side, and the unfinished base has been partly cut off. The large aperture near one end is rectangular. The natural grooves appear on this and the next. Both are reduced on the plate, and each is 7¾ inches long. These were found at Jack Reef, Seneca river, with other bone implements. Fig. 327 differs little from the last, but the aperture is narrower and there are no cuts on the opposite side. Another was found with these.

Fig. 328 is a little larger cylindric bone tube, ornamented with parallel and cross grooves. It was found on Dry hill, near Watertown, where the barbed fishhook was exhumed. It is nearly 8 inches long, and one end is charred. Mr Twining furnished the figure, and thought the tube was made from a bone of the human arm.

Bone counters for games

Lacrosse and other ball games were purely those of strength and skill, but every article of value was often staked upon their results. Nation played against nation, and village against village, and the excitement was often intense. The passion for betting and gambling is very strong in the Indian character. So there was found among them the game of straws, analogous to our game of cards, but never mastered by a white man yet. The game of the bones may have been less widespread, as played by the Iroquois, but the game of the dish or bowl everywhere prevailed, essentially the same in every nation, yet with frequent modifications. A good player of this had as wide a reputation as any chess player of modern times.

A full description of these is not necessary now, but a few words on them may not be amiss.

The Jesuits mention the game of straws among the Hurons in the *Relation* of 1636. Charlevoix gives an account of it as he saw it played in 1721:

> These straws are small rushes of the thickness of a stalk of wheat and two fingers in length. They take up a parcel of these in their hand, which generally consists of 201, and always of an unequal number. After they have well stirred them, making a thousand contortions of body and invoking the genii, they divide them, with a kind of awl or sharp bone, into parcels of 10: each takes one at a venture, and he to whom the parcel with 11 in it falls gains a certain number of points according to the agreement: 60 or four score make a party. There are other ways of playing this game, and they would have explained them to me, but I could understand nothing of the matter, except that the number nine gained the whole party. *Charlevoix*, 2:102

In this we find a pleasurable use for the long and sharp points of some bone awls. They were not merely useful, but were employed in their games of chance. We have another account in *New England's prospect*, describing the Indians there:

> They have two sorts of games, one called *Puim*, the other *Hubbub*, not much unlike Cards and Dice, being no other than Lotterie. *Puim* is 50. or 60. small bents of a foote long which they divide to the number of their gamesters, shuffling them first betweene the palmes of their hands; he that hath more than his fellow is so much the forwarder in his game: many other strange whimseyes be in this game; which would be too long to commit to paper. *Wood*, pt 2, ch. 14

The Indians near New York city were also fond of this game, which they called *senneca* in 1679.

Of the two games resembling dice the writer has given a full account in the *Journal of American folk-lore*, vol. 9. The game of peach stones, or the dish, he has played with Indians, and the Onondagas call it *ta-yune-oo-wáh-es*, throwing the bowl to each other, as they take it in turn. Six peach stones are placed in a bowl, and the game is used at the New Year's feast, clan against clan. The stones are black on one side, white on the other, and five or six are the only winning points. Six make *o-hén-tah*, a field; five make *o-yú-ah*, a bird. This is the great game described in the *Relation* of 1636. Wood describes it as played in New England with bone counters:

> *Hubbub* is five small Bones in a small smooth Tray, the bones bee like a Die, but something flatter, blacke on the one side and white on the other, which they place on the ground, against which violently thumping the platter, the bones mount changing colours with the windy whisking of their hands too and fro: which action in that sport they much use, smiting themselves on the breast, and thighs, crying out, *Hub, Hub, Hub;* they may be heard play at this game a quarter of a mile off. The bones being all blacke or white, make a double game: if three be of a colour and two of another, then they affoard but a single game; four of a colour and one different is nothing. *Wood*, pt 2, ch. 14

In the *Relation* for 1636 we are told that among the Hurons "both sides bet loud and firmly. When the one on the opposite side holds the dish, they scream loudly, '*Achinc*, *achinc*, *achinc*,' three, three, or else *Io-io*, *io-io*, *io-io*, wishing that he may throw only three white or three black."

A variety of this game is now played by the Iroquois with eight bone counters, or buttons of deer horn. It is probable that both were at first played with plum stones, so rarely are bone counters found on Iroquois sites. Our earliest account is of stones of fruit. In the domestic game eight bone or horn counters are used, but no dish. So the Onondagas call the game *ta-you-nyun-wát-hah*, or finger-shaker, the pieces being thrown from the uplifted hand on a blanket. The Senecas called it *gus-ga-e-sá-ta*. Six white or black count two, called *o-yú-ah*, or the bird; seven of a color count four, called *o-néo-sah*, or pumpkin; all white or all black gain 20, or a field, called *o-hén-tah*.

Fig. 163 is a Seneca gaming bone, which has been a little burned toward the edge. This is modern, and is in the Buffalo academy of science. Fig. 164 is from another set there, and has dots arranged inside the circumference. One side is red. Fig. 166 is also from Buffalo, but is an earlier and irregularly circular form. Fig. 168 is similar, but larger and thicker. It is from the Atwell fort, and is a quarter of an inch thick. This is the oldest the writer has seen, and, while some small stone disks may have been used, it is more probable that fruit stones were the original Iroquois dice. They were in use when the game was first described. In some other states bone counters may have been exclusively used, and among the western Indians the dice themselves were of various forms. The Senecas called the peach stone game *gus-ká-eh.*

At an early day the Iroquois children had a game requiring pointed bones. A Jesuit remarked the likeness of Canadian Indian games to those of France.

> Among others, I have seen the little Parisians cast an arquebuse ball in the air, and catch it with a stick a little hollowed; the little savage Montagnards do the same, using a little bundle of pine branches, which they catch and pitch in the air with a pointed stick. The little Iroquois have the same pastime, throwing a small pierced bone, which they transfix in the air on another little bone. A young Iroquois told me this, seeing the Montagnard children playing. *Relation*, 1634

George Copway gives a brief account of both games among the Ojibways. First is the tossing play used indoors. An oblong knot of cedar boughs is made about 7 inches long, and to this a string 15 inches long is attached. By this the knot is swung. To the other end of the string a sharp stick is tied, which is about 2½ inches long. "This is held in the hand, and, if the player can hit the large stick every time it falls on the sharp one, he wins." *Copway*, p. 48

This is not very clear, and it is immediately followed by an account of a "bone play" indoors, which is no clearer. In this they use "hoof joint bones of the deer. The ends are hollowed out, and from three to 10 are strung together. In playing it they use the same kind of sharp stick, the end of which is thrown into the bones." *Copway*, p. 48, 49

However little we may understand this, we find in it a use for the worked and perforated deer phalanges not apparent before. At the Pan-American exposition good examples of these bones arranged for this game were shown, five or six in a set, much like those commonly called whistles. The broad and pointed awls with central perforations for strings, may have been used in similar games.

Rattles

In all Iroquois dances and feasts the rattle in some form is indispensable; but none of these instruments will be figured here. Those familiar to the writer among the Onondagas are made of bark, turtle-shells, cows horns, and squashes or gourds. Strength is required, for they are not merely shaken but struck on a bench. Morgan's description of their use is good. Two musicians sit on the peculiar bench used and sing. "The rattles were used to mark time, and as an accompaniment to the songs. In using them they were struck on the seat as often as twice or thrice in a second, the song and the step of the dancers keeping time, notwithstanding the rapidity of the beat." *Morgan*, p. 280

The turtle-shell rattle is the favorite and ancient instrument, and the Senecas call this *gus-da-wa-sa*. Morgan describes and figures this, and his account is quoted:

> To make this rattle they remove the animal from the shell, and, after drying it, they place within it a handful of flint corn, and then sew up the skin, which is left attached to the shell. The neck of the turtle is then stretched over a wooden handle. *Morgan*, p. 280

Mr Morgan gave a good figure of this instrument, which has been often copied. One made from a very large turtle is reserved for special occasions, being used only in the great feather dance and in the medicine dance with the false faces. It is carried by the chief of the false faces, and its use is quite exhausting. Its name includes two Onondaga words, *kah-nya-ten-go-nah*, big mud turtle, and *ka-sta-wén-sa*, rattle. Smaller ones are also used. The writer's is about the usual size of these, being a little over a foot in extreme length, and was taken from the snapping turtle. The main part of the handle enters the end of the shell, and is strengthened by two diverging splints of polished hickory, penetrating the shell midway in the back, while a similar single splint performs the same office below. It is proper to say that the names varied in the several dialects, and there may be some variety of usage. A moderate difference will be here observed between the Onondaga and Seneca words.

The bark rattle is a long, straight piece of bark, having the ends and edges neatly turned over, and is rarer than the others. The horn rattle is modern, of course, being made of a cow's horn cut off at both ends. These are closed with wood, as in the bases of old powder-horns. The handle passes through both ends, but protrudes from but one. This rattle may be used in any dance.

Though not made of horn or bone the drums and another rattle may be mentioned here. The gourd rattle retains its natural pyriform shape, and is called by the Onondagas *a-e-tót-hah ka-sta-wén-sa*, the first word being the name of the medicine dance in which it is used. Mr Morgan does not give this prefix. No rattles or drums appear in a condolence, which is purely civic in character.

The Indian drum is *ga-no-jó-o* in Seneca, *ka-na-jú-we* in Onondaga, meaning a covered kettle. It is used in the war dance and many others, but never in the snake dance. The big drum is also used in the annual feast of the dead, held in the spring. Its size is that of a large keg, with the diameter of the old-fashioned churn. The smaller ones, of the size of small paint kegs, are used in most dances.

Knee rattles of deers hoofs were used in early days. The writer has seen sheeps hoofs employed as a substitute. A fringe of these was tied round the leg, and added to the noisy effect of the dance. When brass or copper bangles could be procured, these became substitutes or additional ornaments, and are yet found on Indian sites. The writer has seen conical rolls of sheet iron used in place of these. Every jingling or clashing ornament increased the desired noise of the dance. Some of the worked phalanges may have had a similar office.

Miscellaneous

A number of articles not easily classified will be grouped under one head. Some are unique as far as reports go; but others like them may yet appear, and one aim of these papers is to call out unknown material. In articles of horn and bone this is to be hoped for more than in other kinds. When we remember how great has been our advance during the last 10 years in a knowledge of these aboriginal relics in New York, and how much practically unworked ground awaits examination, we can easily believe that we are now only in the skirmish line, preparing for the later advance in full force. Some now in the field will fall before that advance is made, but they may be assured that every early effort will have some later value.

Fig. 89 suggests a bone harpoon begun, but the slight notches are turned the wrong way. It is flat, and probably had a sharp point which has been broken off. The general form is that of a flat awl, but these slight and uniform notches arouse conjectures. Harpoons are not rare in the preparatory stages. This is from Brewerton, where these implements have been found in the greatest numbers.

Fig. 98 will introduce the reader to some implements of a puzzling nature. The one here represented is of horn, nearly half preserving the cylindric form, the rest of the long handle being cut into oblong facets, so that it becomes somewhat flat near the groove toward the lower end. This groove produces an irregular square, furrowed on one surface with deep longitudinal grooves. Mr Richmond obtained this in Rice's woods, near Stone Arabia, and thought it had been used in marking pottery. Those who have studied aboriginal pottery will see that such implements were not employed, though the suggestion would be otherwise probable. Such an implement would make parallel lines, and these do not strictly appear on native vessels. It might have been used in scraping hair from hides, but its value for this has not been tested. Had this been its use, more of its kind would have been found, but it seems quite rare. Fig. 338 is another of these, which is also of horn. It was found by Dr Hinsdale on the Sheldon fort site in Pompey. In the plate it is reduced, the actual length being 7½ inches, and the greatest thickness ⅝ of an inch. There are six deep grooves at one end, which are much longer than those in the Richmond example, and are not bounded by a cross groove. The sides are cut down so that it makes a rudely handled and abruptly curving tool. The writer thinks its most probable use was in preparing clay for the finer articles of earthenware. Its furrowed surface and peculiar form would fit it for this use. It is to be remembered that both these sites were occupied in recent times, probably about 1630, and are well supplied with European articles.

Two of these articles are in the Toronto collection, and both are of bone. One is 11¾ inches long and quite straight, the grooves being on a line with the general surface, but on an expanded part of the implement. The other is more than half as long, somewhat curved, and with the grooved surface at an abrupt angle with the rest. Mr Boyle says: "Both are grooved at one end, as if to produce a pattern on something soft — perhaps for drawing lines to ornament articles of clothing." *Boyle*, p. 77

Fig. 110 is an unfinished angular bone article in the Buffalo collection. One perforation is complete, and another begun. They suggest the use of metallic tools. Two longitudinal grooves were also commenced. While this may have been an ornament, some things suggest an unfinished barbless hook.

Fig. 133 is a curious bone article found by Dr Hinsdale at Brewerton, suggestive of an adz. In outline it shows two sides of a rectangle. The ends are neatly worked at the edge, but not sharp enough for cutting. They could have removed charred wood. The general surface is large and flat, and the implement is thin in the shorter part. It probably had a wooden handle attached. It is a rare if not unique article here.

Fig. 160 was found by Dr Hinsdale at the same place. It is of bone, nearly flat, and quadrilateral. The outline is slightly curved, suggesting a hammer or double-bitted axe, but it is of considerable and uniform thickness. There is a central cross groove, and some notches at the edge. It may have been used for a sinker.

Fig. 161 is a bone ball from West Bloomfield, being one of the two in the Hildburgh collection. They are ¾ of an inch thick, and rare. Fig. 285 is a paint cup from the Christopher site, which is made from the base of an antler. It is moderately worked, and shows some traces of its former use. Fig. 299 is an example of some small bone bands in the Burr collection and from the Atwell fort. They look as if a groove had been carefully cut around near the top of a bone suitably prepared, and then a narrow ring of bone had been neatly separated. The Buffalo collection has some of these curious articles. The wonder is that they have so well endured a burial of three centuries. No opinion has been expressed regarding their use.

Fig. 322 is from the Richmond collection, and was found at Rice's woods. The site shows its modern character. In the figure the implement is half its true length. From the tip of the fork to the chisel point is 7¾ inches, and from the same tip to the extreme point is 10¾ inches. It is an adz made from a deer's antler. The short prong is sharpened to a chisel edge, is nicely worked the entire length and is now very straight. One prong has been cut off, and another left for a handle. This is less worked, but it is a fine and rare implement. In the same collection and from the same place is an antler prong 10½ inches long, cut off at the base, where there are several cuts.

Fig. 331 is a long and hollow bone found in a cache at Cayuga. It has been cut down by grinding, and thus laid open in the center. The orifice is 4¾ inches long, and the bone has a length of 11 inches. The joints are left at each end. It was full of red paint when found in 1886, and a small, elliptic sandstone pestle or muller, 3 inches long, lay along the opening. It is much reduced in the figure. Fig. 332 shows a fine bone mortar from the Garoga fort, which is in the Richmond collection. It is reduced in the figure, being 4¾ inches high, 2 inches wide at the top, and 1⅜ inches at the bottom. It is excavated nearly to the base. The accompanying bone pestle has been already shown.

A large number of long bones from Ohio were in the Pan-American exposition, and were called scrapers. They were cut much like fig. 331, but more deeply, and probably had the use assigned. The Cayuga example was a paint box.

Fig. 342 is one of the rarest of all New York articles, being an implement made of a walrus tusk. It is curved, angular, and has been ground to a broad point at one end. The actual dimensions are 16 inches of length, and 1½ inches of thickness, being nearly as wide throughout as at the thickest part. With it were found large bones and other relics, and a gouge of walrus tusk broken in two. Unfortunately this fine article is much weathered. It came from the early fishing place at Brewerton.

Fig. 349 is a novel implement in the Bigelow collection, and from the Christopher site. It is a well worked bone naturally deeply grooved on each side, but with the edges of the grooves ground flat. A rounding crosscut connects these at each end. The one at the basal joint is not conspicuous, but the other is very deep, forming a curved and prominent horn on each side. Both these are ground to a rounded cutting edge, and might have been used for cutting strips of hide with parallel edges. The shorter horn has been split and recut, and both are ground from the inside, the natural curve of the bone remaining without. The edges are very slightly ground outside, and cracks nearly reach the base.

Fig. 353 is another novel article from the same site. It might be called a flat double chisel or gouge, being sharp at both ends. The material seems to be horn, and the edges are ornamented with notches. These edges are parallel, moderately deep in the center, and there are two circular perforations near the center of the implement. One surface is nearly straight, and retains part of a natural longitudinal hollow. The other curves, and has a deep, broad hollow, worked from end to end, as in the figure. This fine article may have been a shuttle, or have been used in some game.

A piece of horn has been cut off from an antler and partially worked. It is 5¼ inches long, and has been excavated on one side, perhaps for a paint box. This is from the Otstungo fort and is in the Richmond collection. The writer found part of an antler on the Wagner hollow site in Montgomery county in 1889. It had been neatly cut off and was partially worked, though most of the original surface remains. Toward the upper end broad diagonal grooves have been cut. It is 4¾ inches long by 1½ inches thick. Copper saws were found on the same site.

A slightly curved bone implement is in the collection of H. A. Pride of Holland Patent. It was found in the town of Marcy, on the north side of the Mohawk river, and not far from Oriskany. The sides and edges are parallel, and it is 5¼ inches long and over an inch wide. The thickness is ⅗ of an inch. Both ends are brought to a moderately sharp edge, suggesting a double chisel, but one of these has the characteristic feature of fig. 98 and 342. Parallel grooves extend from the end on one surface, for over an inch of the length, making a corrugated surface there. They are arranged as in the other examples, and probably had the same use.

In the collection of the Onondaga historical association is a bone spool, given to that society, Mar. 29, 1895, by Mrs Pierce, an Indian woman. It was made by Harry, son of the noted Ephraim Webster, and is much like the wooden ones in form. Indian thread is wound on it. A folding bone toothpick in the form of a fish accompanied this and was made by the same chief. Some Indians at Onondaga have done fine carving in bone.

A hollow bone, nicely wrought at one end, perhaps for a box, was found at Brewerton. It is 2⅞ inches long by 1 inch broad. A long and curved bone is in the Buffalo collection. It is perforated at one end, and polished. The length is 4⅛ inches.

In treating of these things many fine articles have been passed over, because representative forms were needed, and even then the illustrations have exceeded in number those used before. Some are not so remarkable for form as for the high polish given centuries ago, and retained in the earth to the present day. The sharpness of some points is wonderful, and yet, aside from their daily use by their makers, these have often been preserved unharmed for over 300 years. In no class has the writer been so inclined to exceed his limits as in that of harpoons. They are so abundant and variable, that almost every fragment has a charm of its own. A large proportion are of course fragmentary, not strictly fine specimens, but each has its own features.

In some cases it has been difficult to distinguish horn from bone without marring the article, but this is a point of slight importance. Both materials were abundant, and it was merely a matter of choice or convenience which was used. Large harpoons were often of horn, and this seems to have been preferred for the hollow points commonly called arrowheads. Awls were usually made of bone.

The presence of certain bones and teeth is not without interest. In the refuse of the towns, jaws, teeth and bones occur, showing traces of the usual food of the people. Something might be gained in this way from a study of the implements, were this at all needed. Some remains of this kind are certainly suggestive. The presence of two walrus tusks at Brewerton may have resulted from aboriginal travel or trade. In one collection in Jefferson county the writer found a buffalo's tooth and the palate of a drumfish. Close inspection might show other strange materials. The local collector should look well to these. They are not showy things, but are none the less valuable in revealing early life. A bare reference to them will suffice in this paper, which treats of implements and ornaments, and not of food.

To show how little was generally known of bone articles in New York but a few years since, reference may be made to A. E. Douglass's table of Indian relics in his fine cabinet, in 1896. He then had 36 bone implements, 17 of which came from New York. His 30 bone beads included no New York specimens, and but one of his six bone ornaments was found here. Of his 73 images, masks and heads of all materials, but eight were from the United States, and none from New York. The character of the collection is mainly the result of personal opportunities and limitations, and, because of this, some little known collections of a local character are very important in determining geographic distribution and illustrating rare forms. For a similar reason, it seems proper to quote David Boyle's remarks on bone articles in Canada, the home of the Hurons and Neutrals, who were kindred to the Iroquois of New York, and whose remains are directly related to those found here. Mr Boyle says:

> Many tools and a few ornaments were made of bone and horn, but no weapons appear to have been produced from these materials, unless we include those known as harpoons having one or more barbs. On account of the extensive use of bone by the Eskimo, there is a strong temptation to refer many of our specimens of this kind to Innuit origin, especially as the resemblance of ours to theirs is often very marked. But, in this respect, there does not appear to be any more reason for so doing than there is for attributing the same origin to flints, vessels of soapstone and some other things. Still, when we take into account the Huron-Iroquois tradition as to the former abiding place of the nation on the north shore of the Gulf of St Lawrence, we may at once concede the probability of strong Eskimo influences affecting the work of our Indians. *Boyle*, p. 72

Mr Boyle seems to refer the early Iroquois to the north shore of the Gulf of St Lawrence, but the Eskimos lived there in historic times. The Iroquois made the unilateral harpoon of bone long after the whites entered New York, and the bilateral to some extent. The age and origin of many of these are clearly proved. Mr Boyle goes on to say of one fine article:

> Barbed bone hooks are extremely rare. I have heard of two or three others, but this is the only one I ever saw. It is not too unreasonable to suppose "white" influence to have been here at work at a comparatively recent date. It has been noticed that articles made of bone are much more frequently found in some parts of the country than in others. In the Ottawa and St Lawrence counties few bone specimens occur. In the old Huron country they are comparatively rare, and not many are found in the western counties. On the other hand, large numbers have been collected in the neighborhood of Toronto, of Brantford, and in North Hastings county. Awls are the most common form of bone tool. They are from 2 inches to 8 or 10 inches in length. They are sometimes spoken of as needles, but it is most likely that their use was to perforate bark and skin before inserting the thong or fiber employed for sewing. Another form also known as a needle . . . was almost certainly employed in the netting of snowshoes, and in the making of grass mats, for passing the binding string or thong of sinew or root fiber in and out among the stalks of grass as they hung suspended from a bar in front of the worker. It is, therefore, more like a shuttle, although it was not *shot.* An unfinished Ojibwa mat in the provincial museum, yet attached to the original bar shows how the work was and is performed by the native women. *Boyle*, p. 73

This latter needle is the one known by that name in New York. It may be supposed that deeper excavations on village sites will reveal many articles of bone in the Huron country. European articles were so soon taken there that bone may have soon been disused on historic sites. This was not the case in the Neutral country. Mr Boyle proceeds:

> As pins to fasten clothing on the person bone was the best material procurable, and it is not unlikely that many of the so called needles were employed in this way. Specialized forms are found occasionally on which some pains have been taken by way of ornamentation. . . Pins of this kind are generally spoken of as pottery markers, but as a rule the designs on Indian clay vessels required no special tool. Implements for dressing skins very effectively were made from the metacarpal bones of large quadrupeds like the moose, caribou and common deer. Some of these tools are quite smooth at the scraping edge, while others are neatly notched to give them additional grip. *Boyle*, p. 74

These are cut like a gouge or chisel, and the ornamented awls are like those of New York. So are the combs, beads, pendants and grooved implements. Carving of human figures and faces was recent; and Boyle says nothing of bone whistles there. Horn was less used than bone, and some Canadian articles of this material have not been reported in New York. In his report for 1899 he speaks of a considerable number of phalangeal bones from old village and camp sites, adding that "the most commonly accepted theory is that the bones were in some way used as whistles, but nobody has ever been able to produce a sound from them." Most of his examples were found but a few miles from Toronto, and resemble some New York specimens. Stewart Culin is inclined to think they were used in games, and in this theory the Eskimo comes up again. Skull perforation in Canada was after death. The perforated horn articles which Mr Boyle supposed were used for straightening arrows have not been reported in New York. It may be that the artificially grooved boulders took their place.

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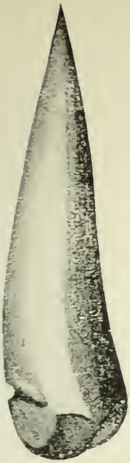
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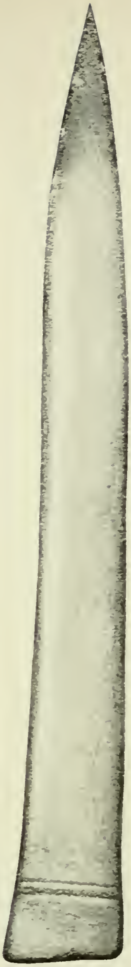
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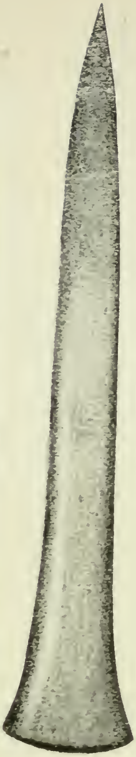
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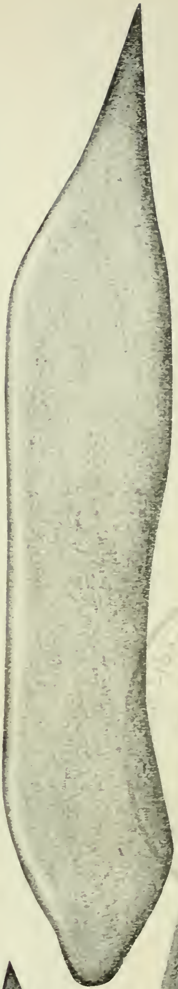
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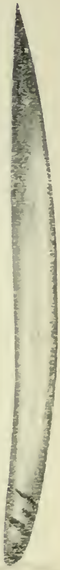
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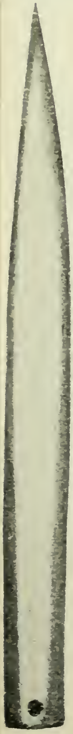
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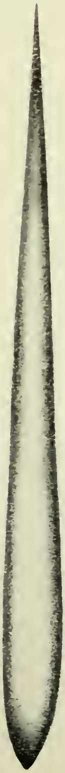
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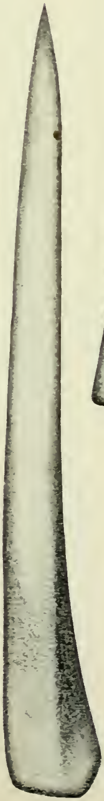
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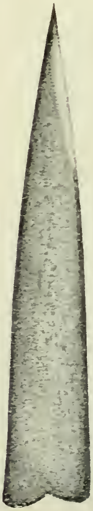
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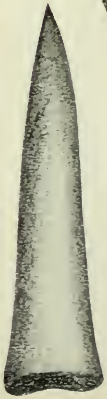
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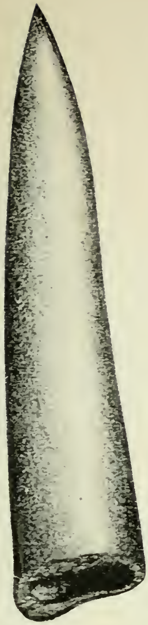
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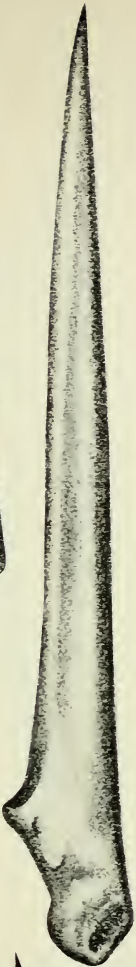
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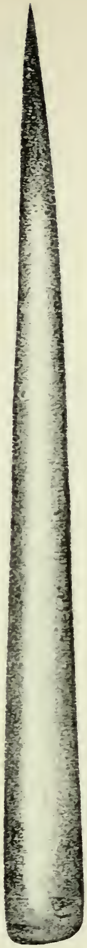
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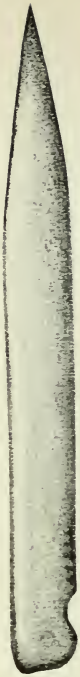
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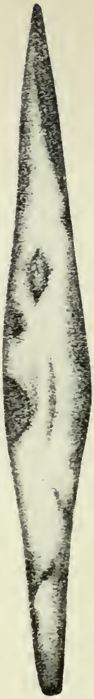
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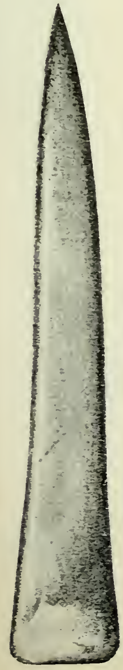
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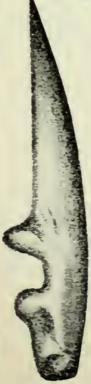
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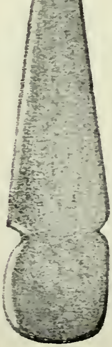
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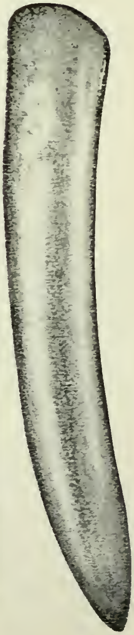
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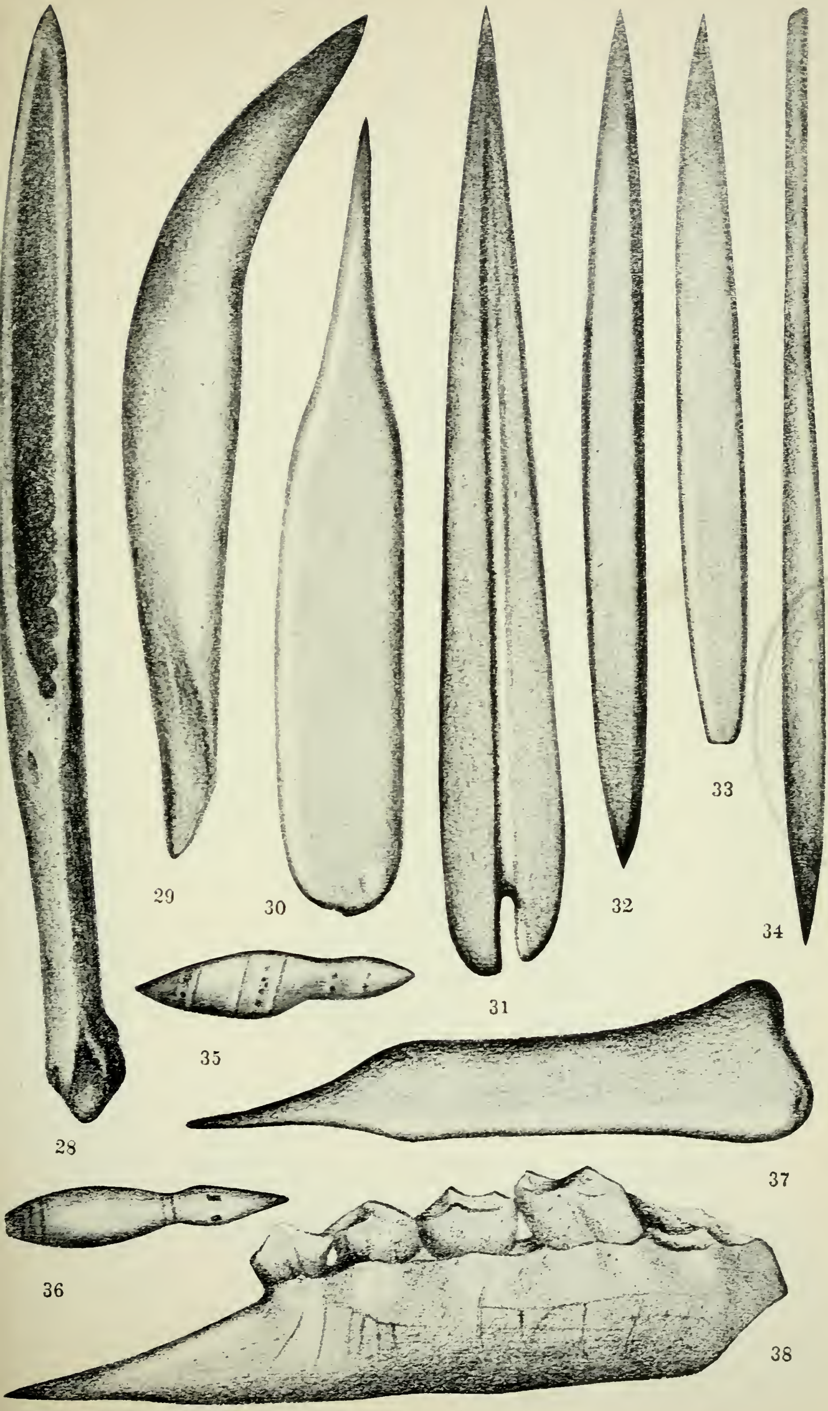
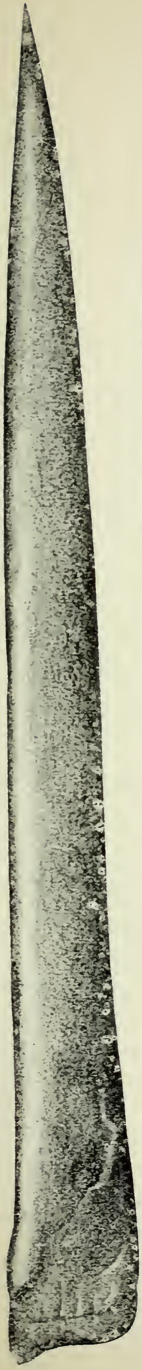
Plate 3





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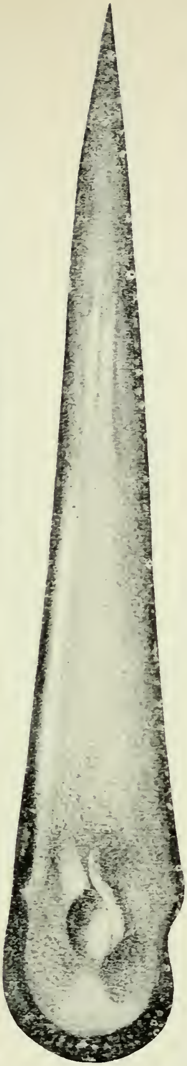

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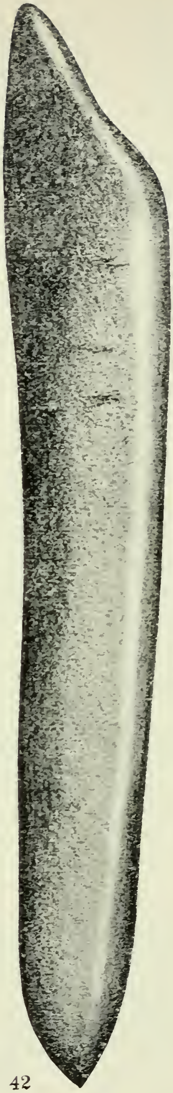

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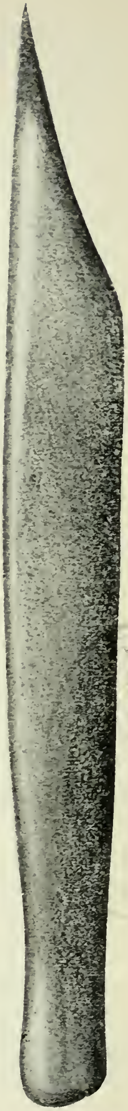

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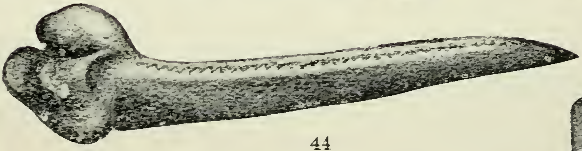

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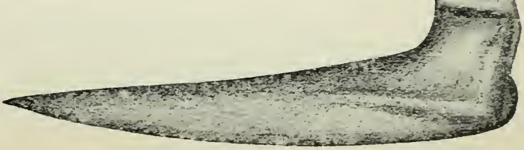

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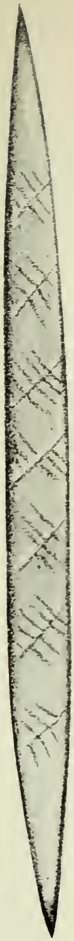

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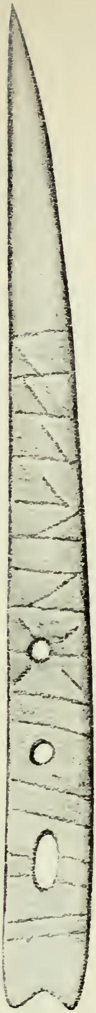

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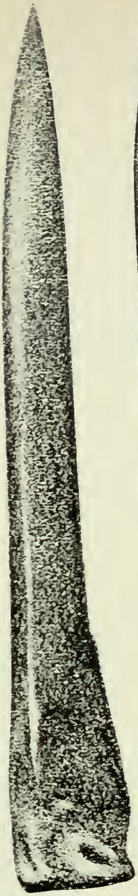

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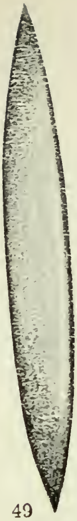

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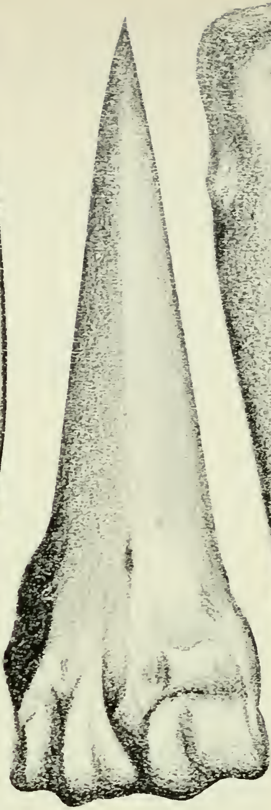

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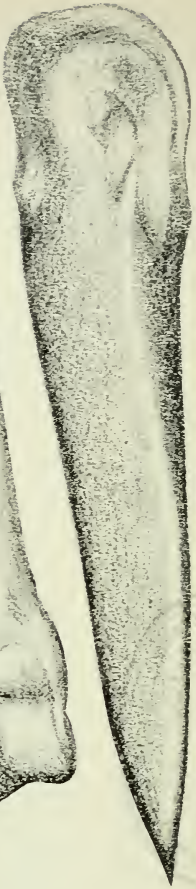

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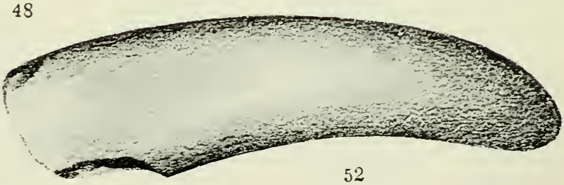

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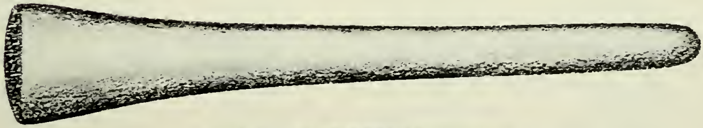

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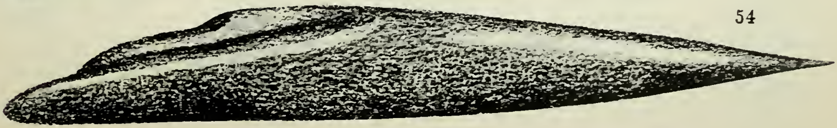

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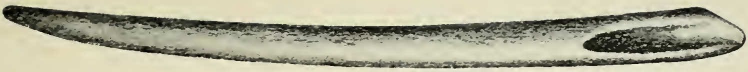
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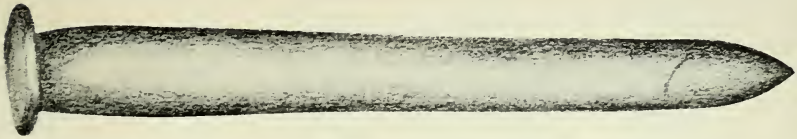
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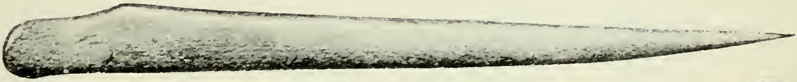
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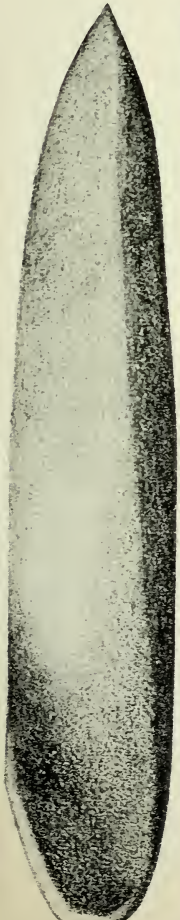
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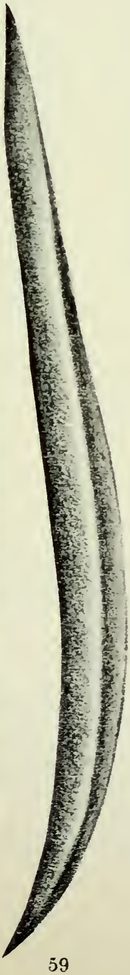
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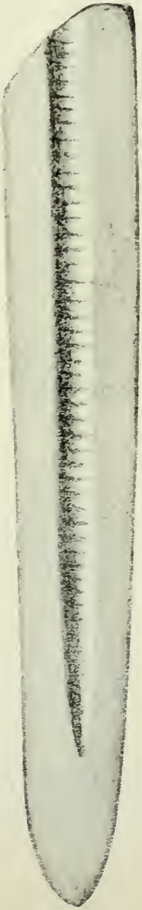
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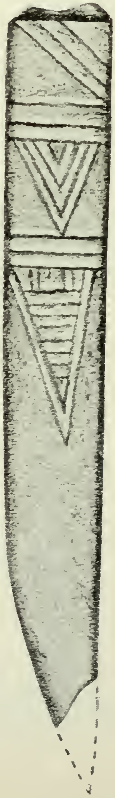
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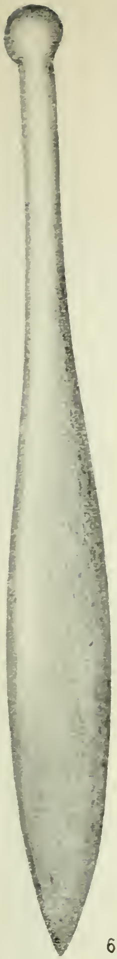
Plate 7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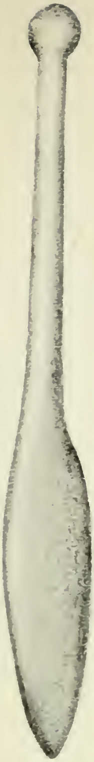
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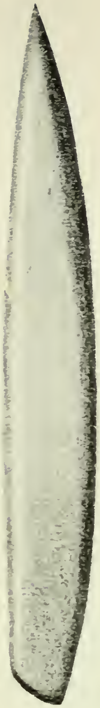
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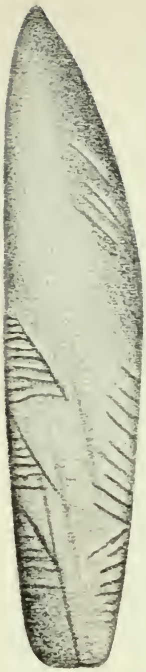
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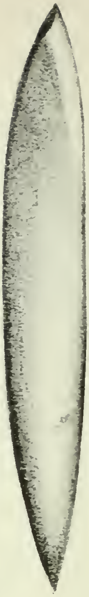
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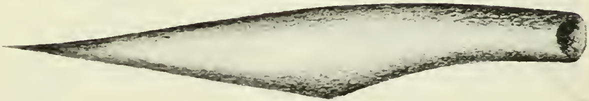
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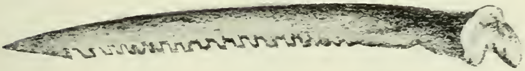
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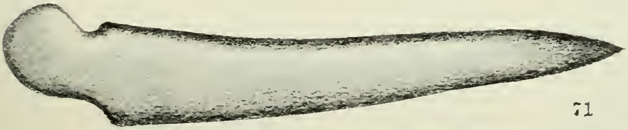
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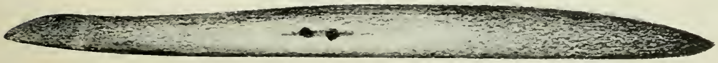
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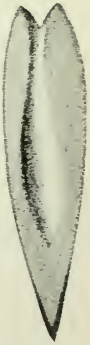
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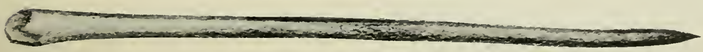
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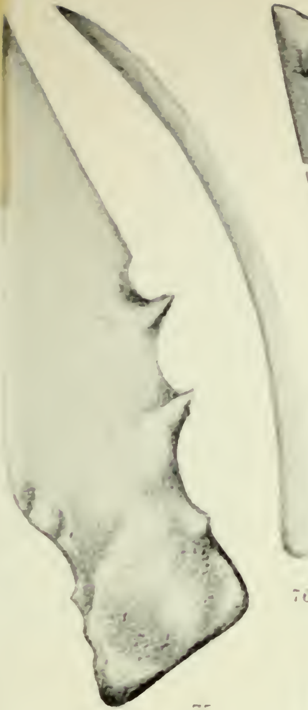
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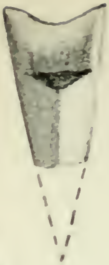
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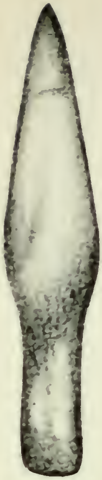
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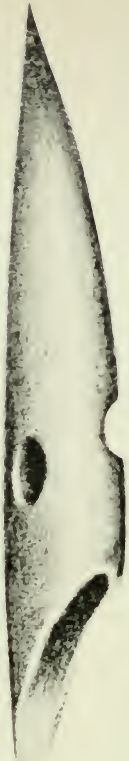
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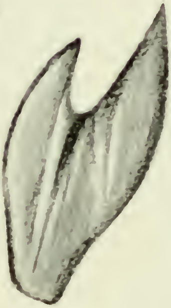
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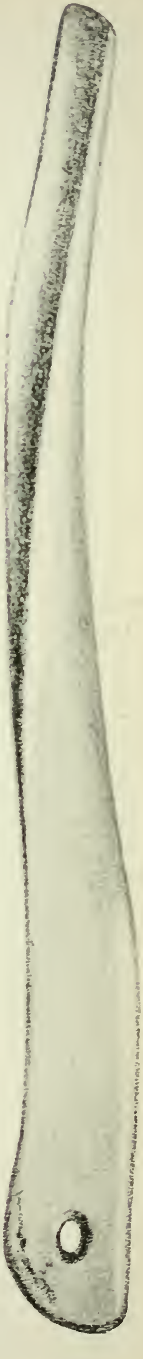
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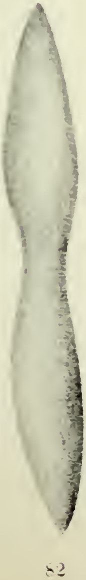
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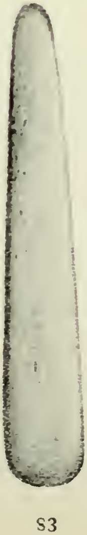
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Plate 9

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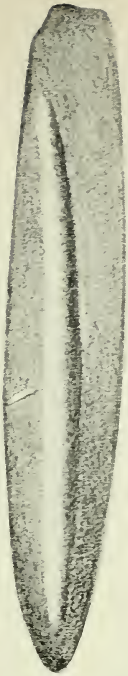
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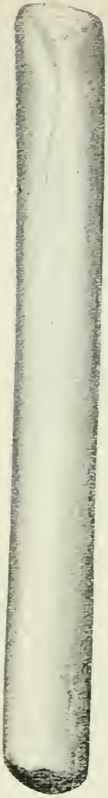
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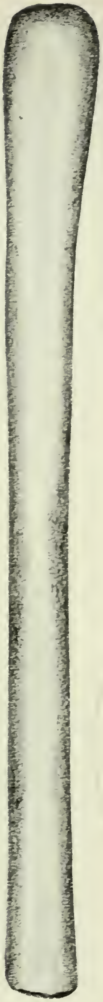
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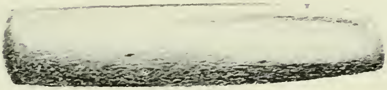
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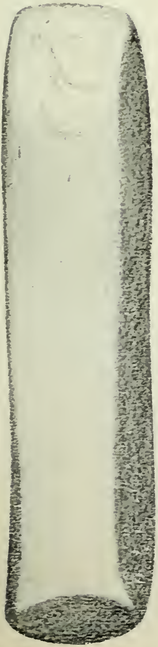
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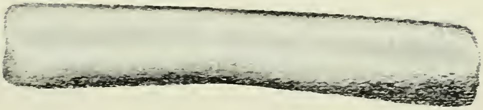
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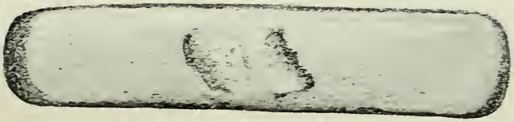
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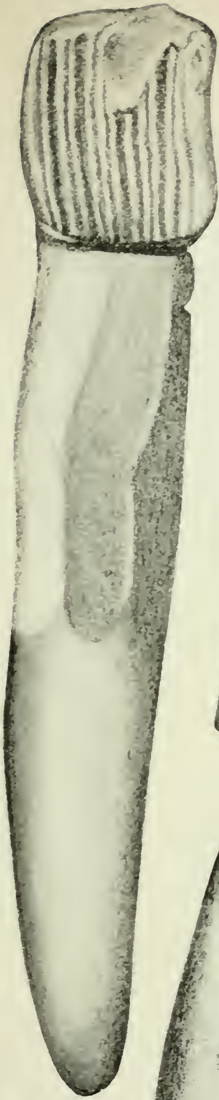
Plate 10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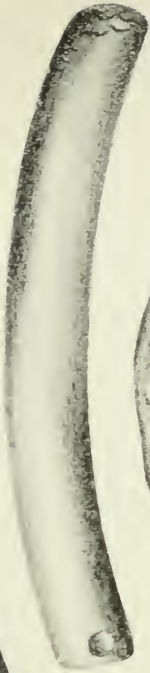
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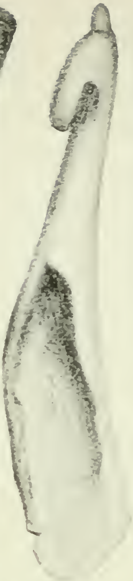
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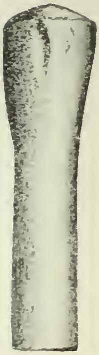
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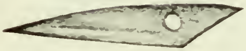
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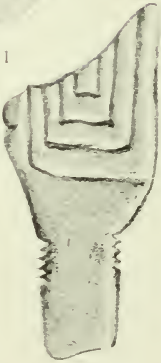
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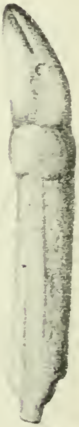
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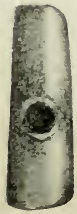
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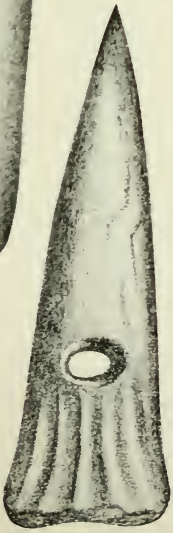
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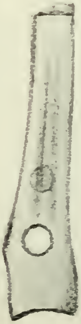
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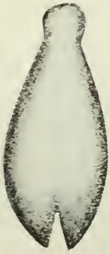
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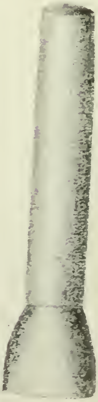
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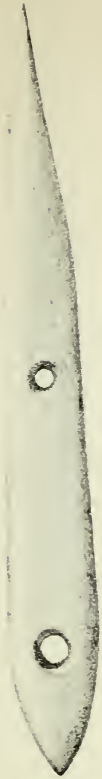
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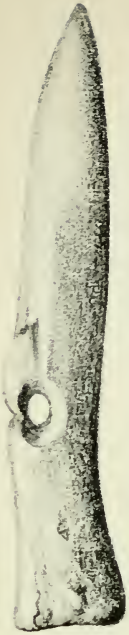
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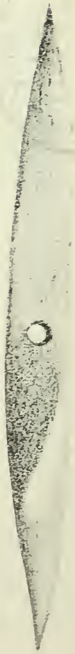
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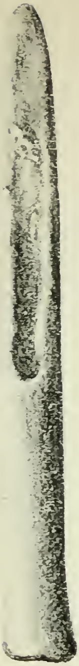
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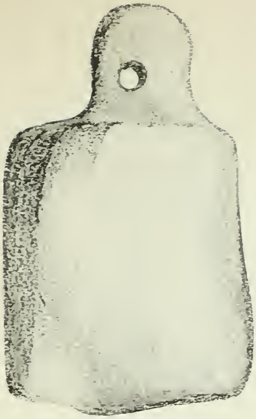
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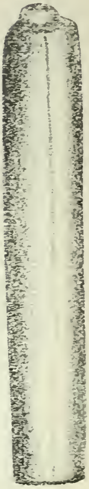
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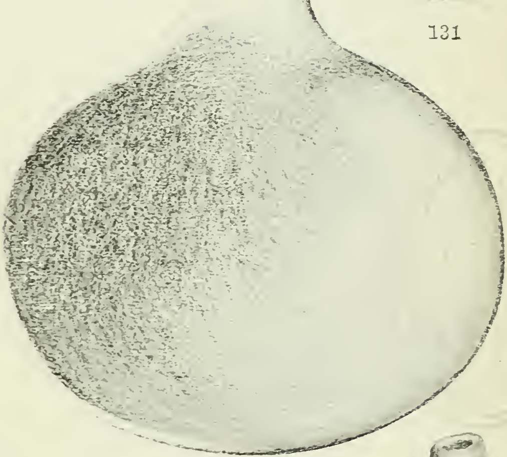
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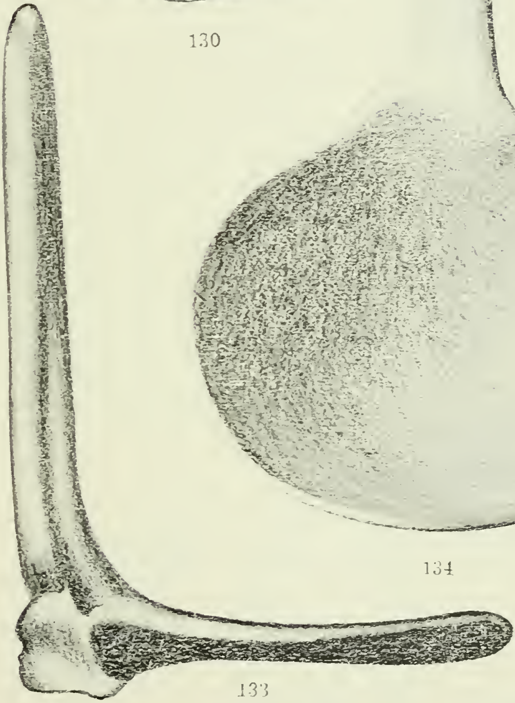
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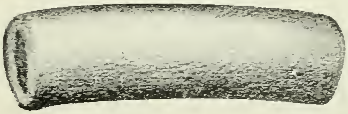
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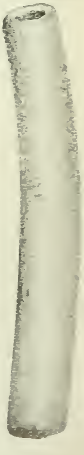
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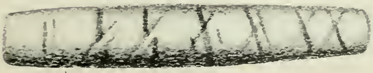
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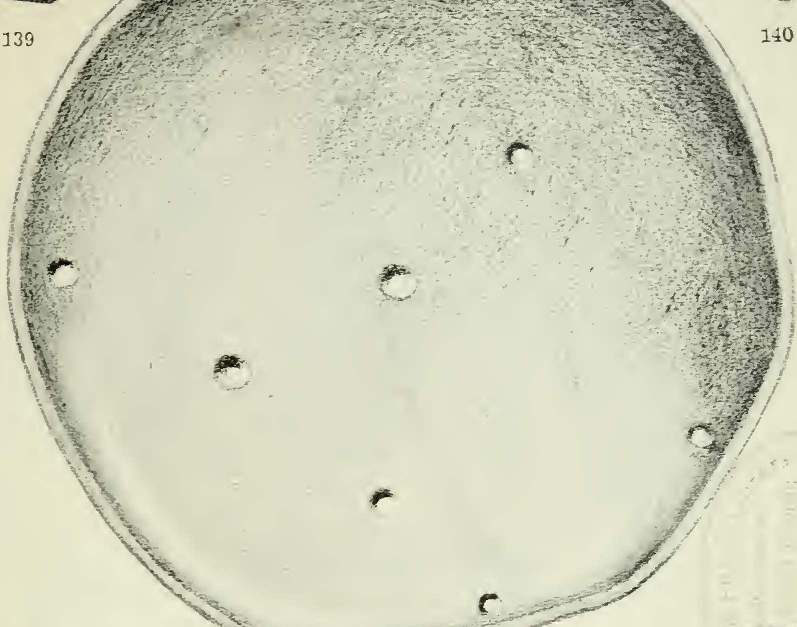

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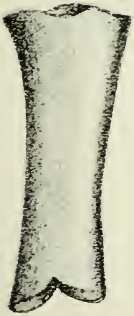

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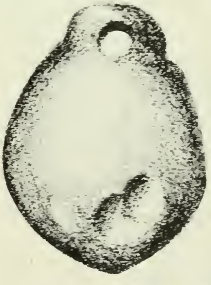

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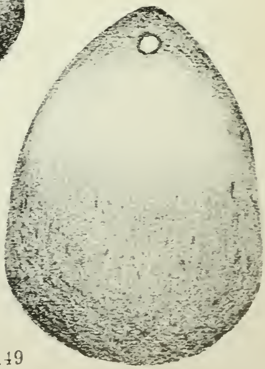

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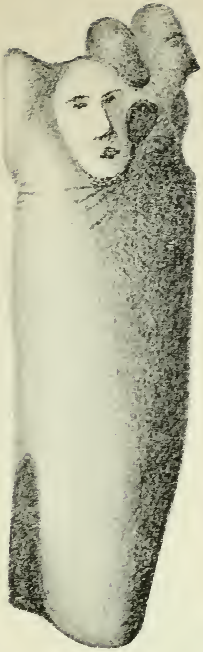
Plate 14



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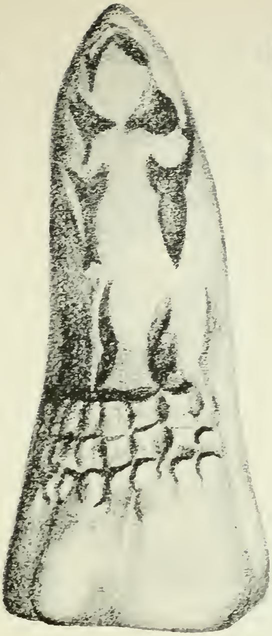

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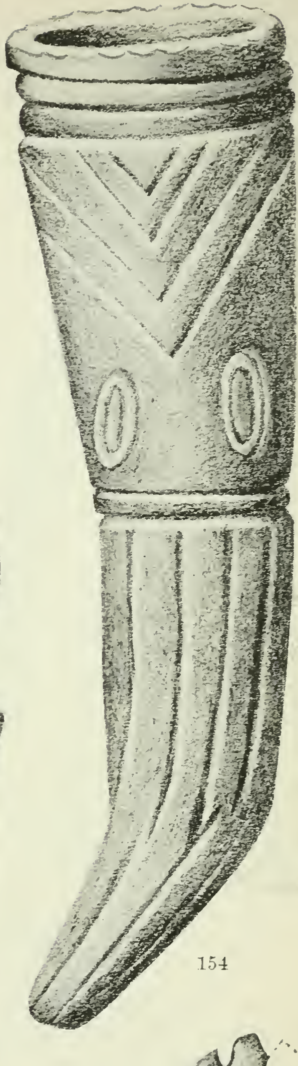

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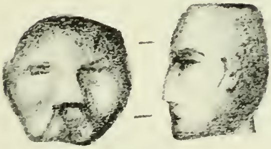

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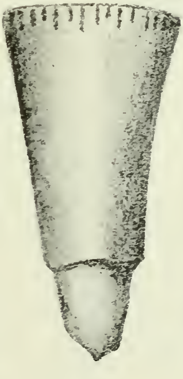

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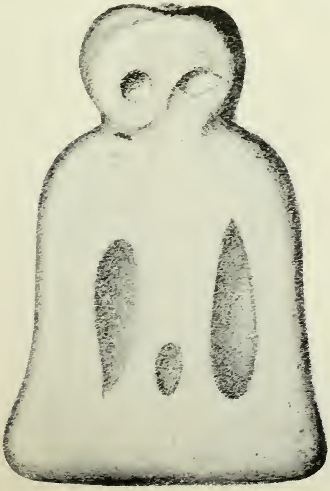

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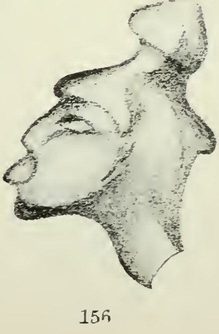

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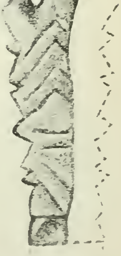

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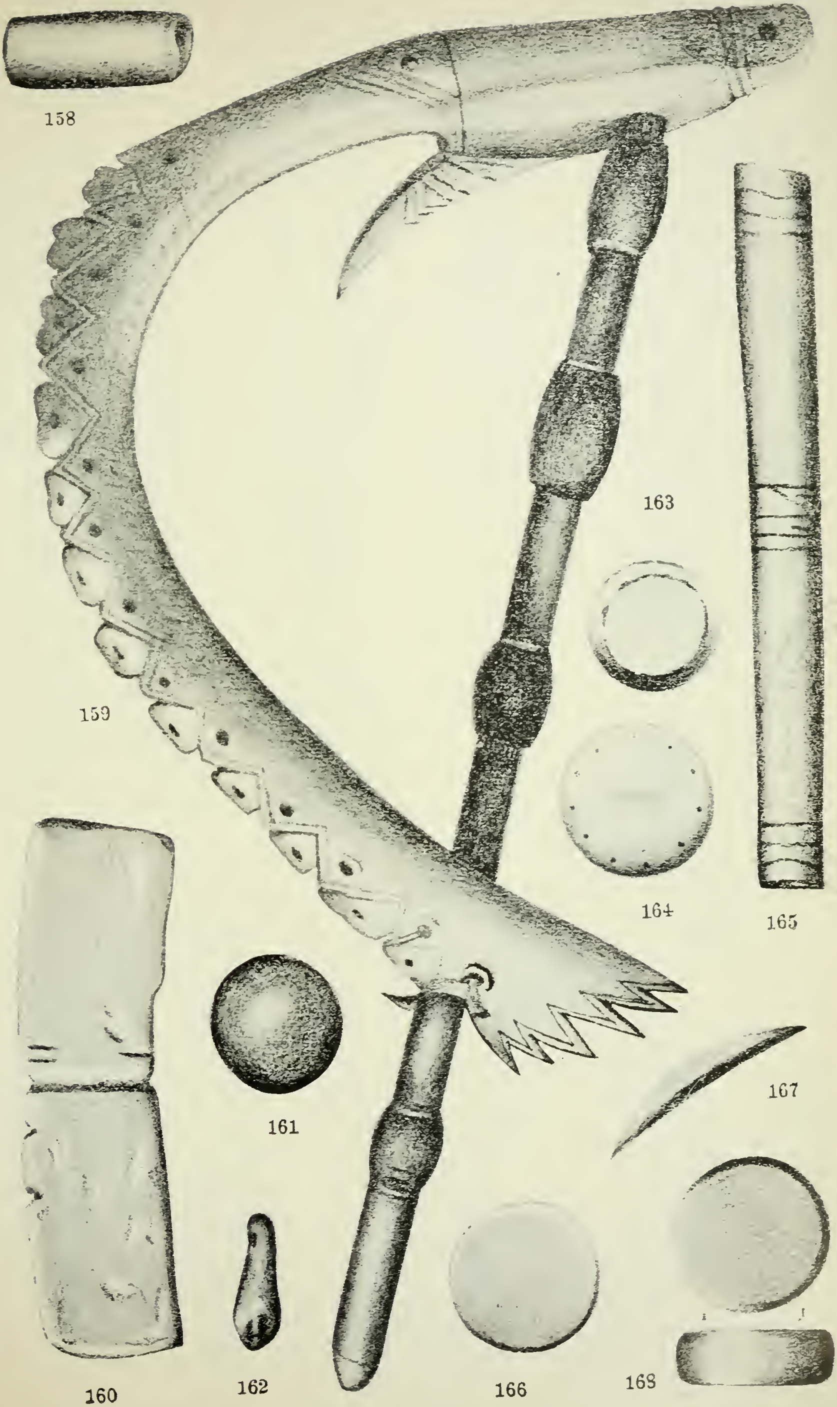
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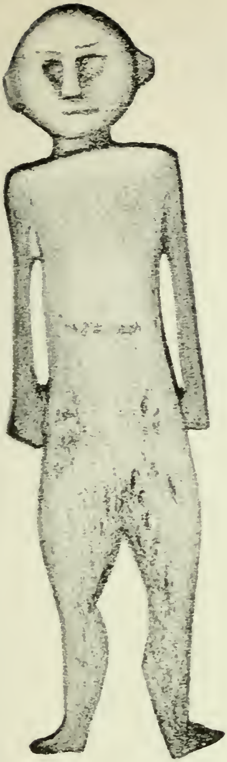
Plate 16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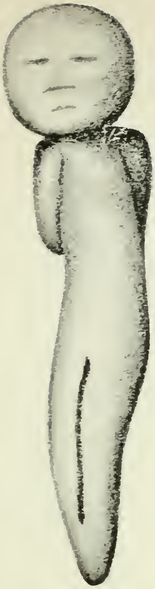
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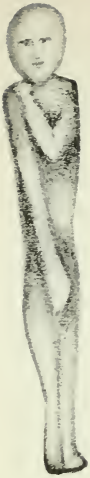
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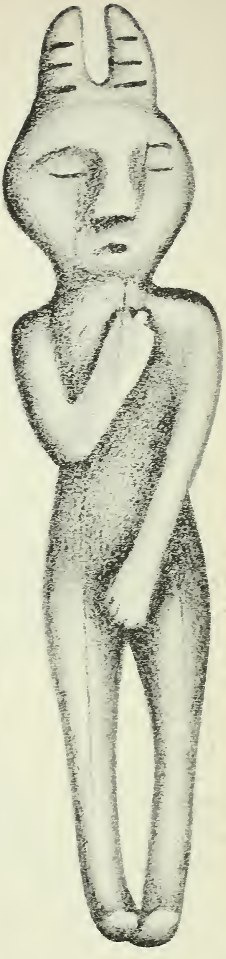
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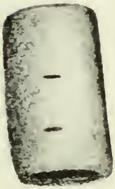
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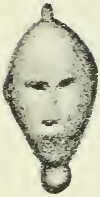
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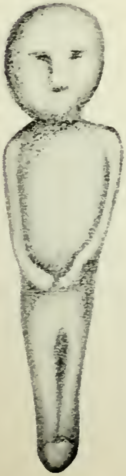
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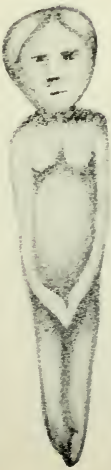
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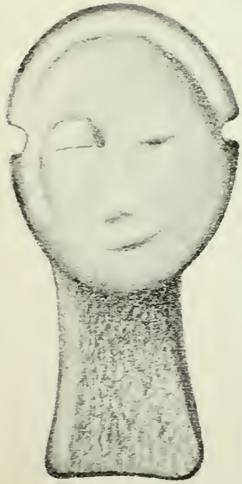
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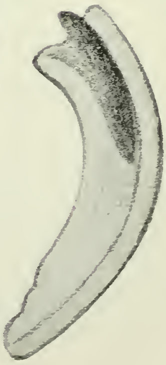
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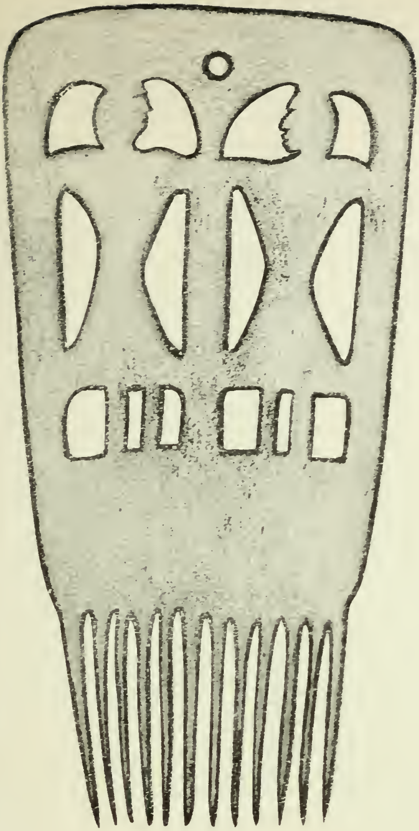

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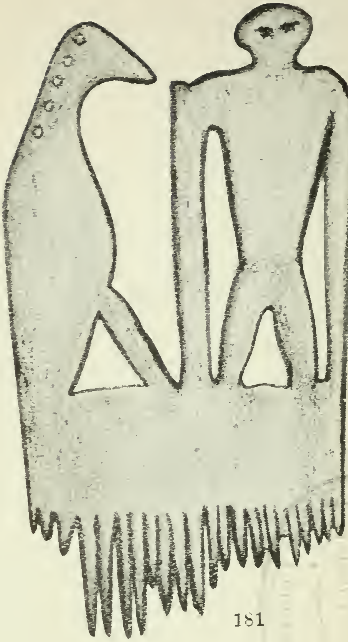

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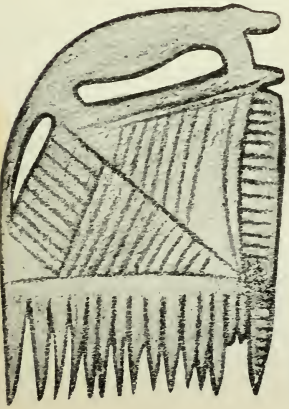

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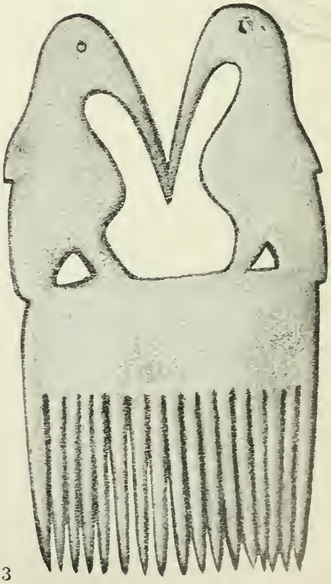

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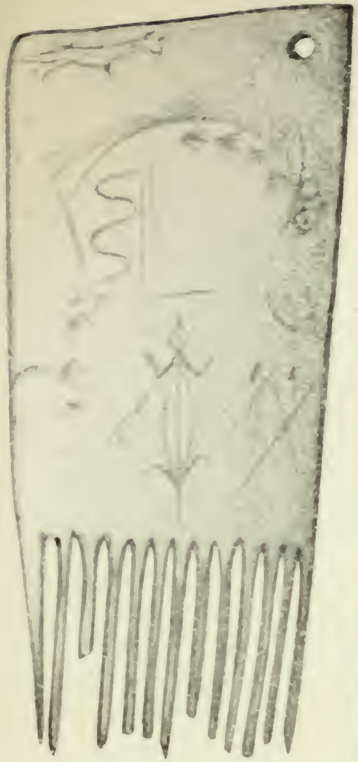
Plate 18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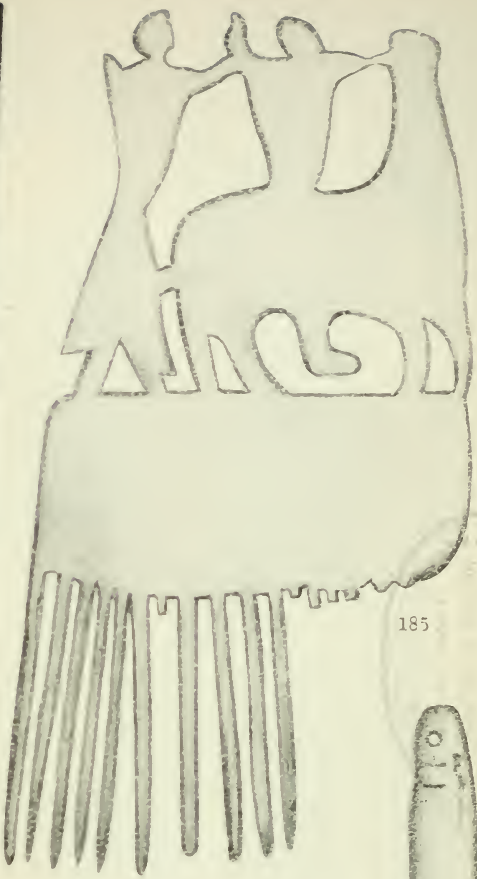
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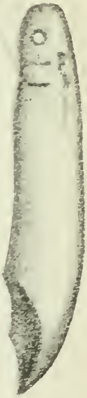
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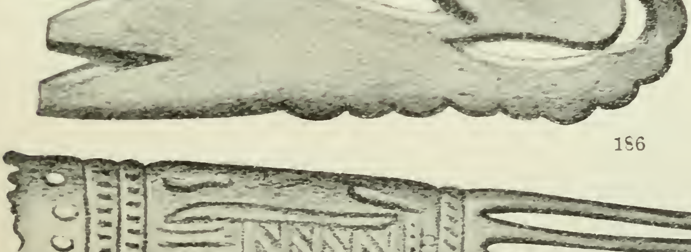
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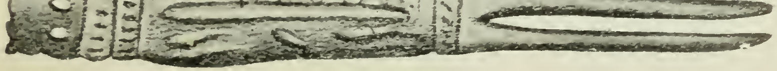
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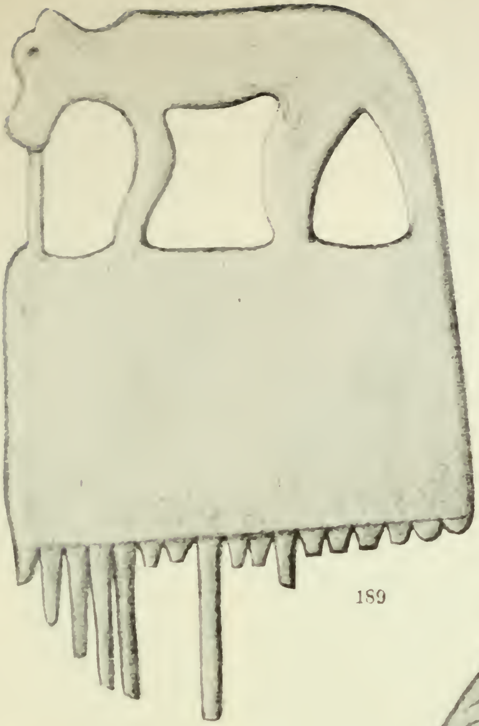

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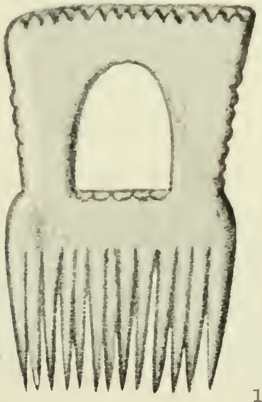

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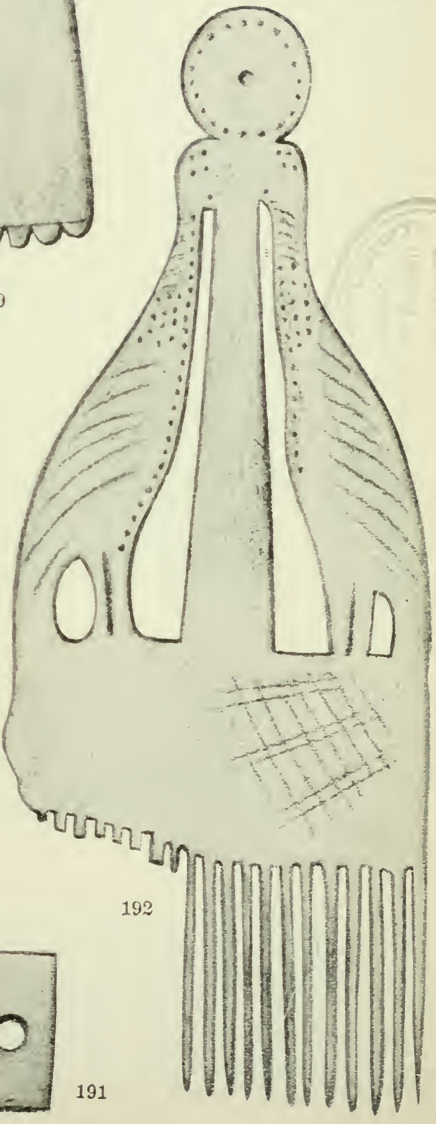

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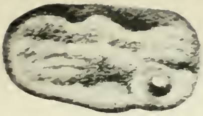
Plate 20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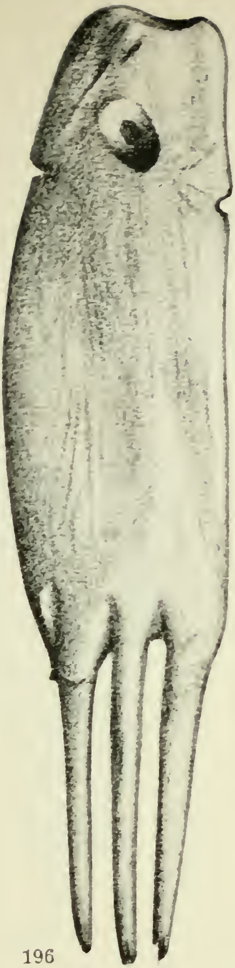
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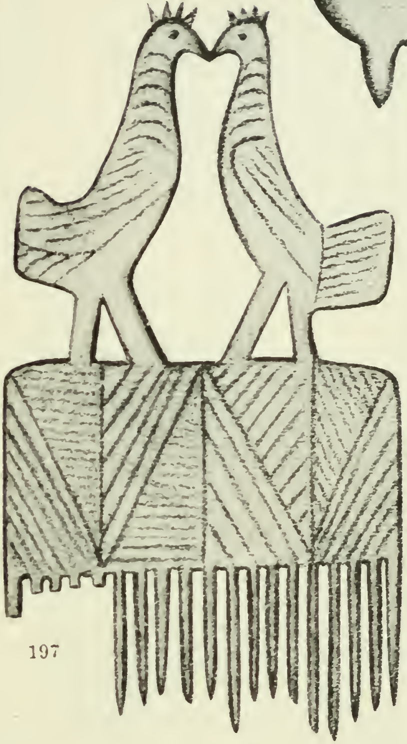
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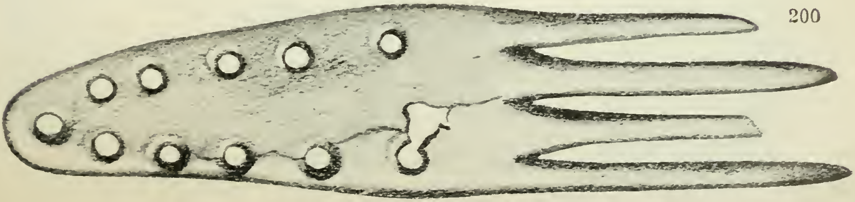
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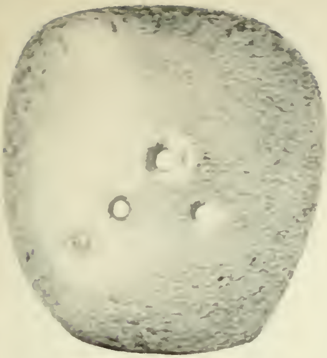
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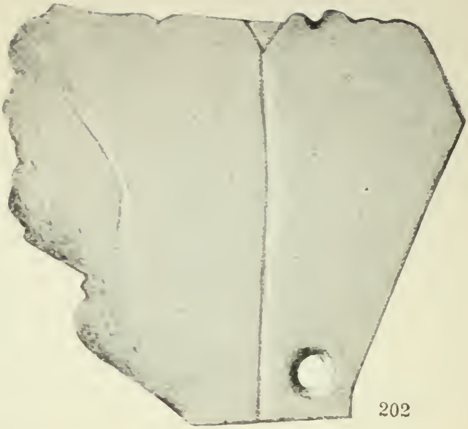
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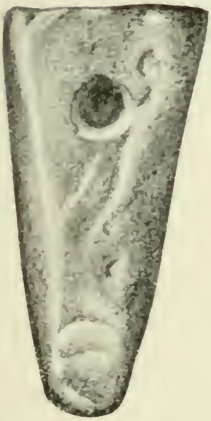
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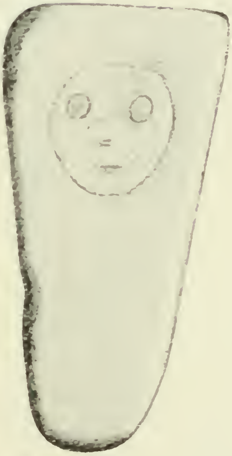
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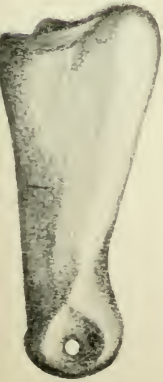
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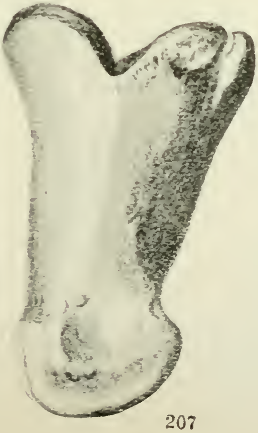
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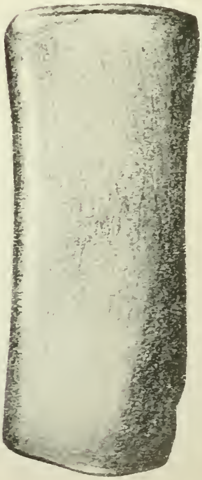
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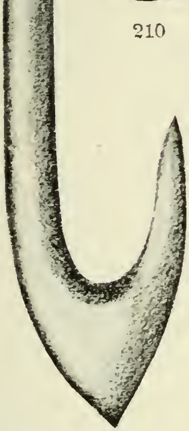

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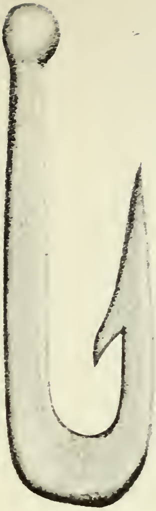

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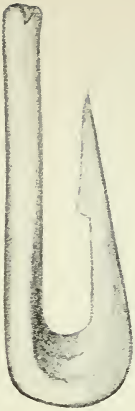

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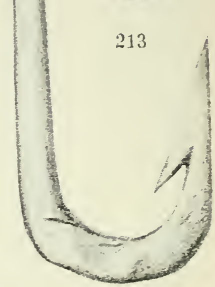

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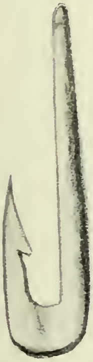

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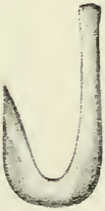

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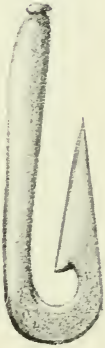

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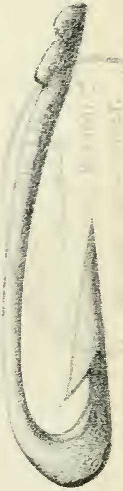

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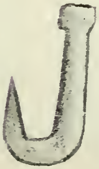

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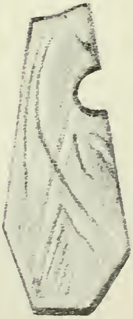

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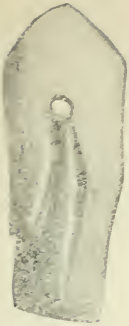
Plate 23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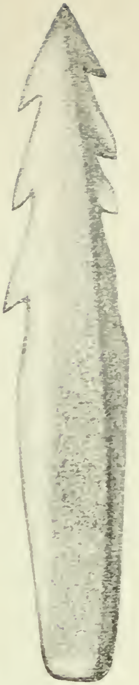
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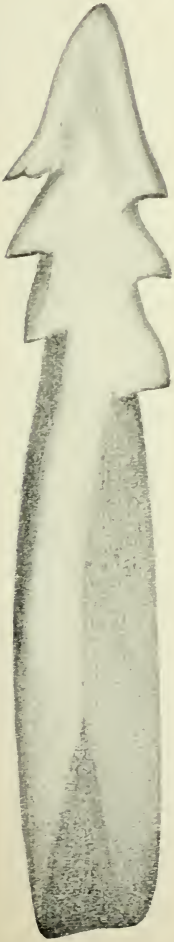
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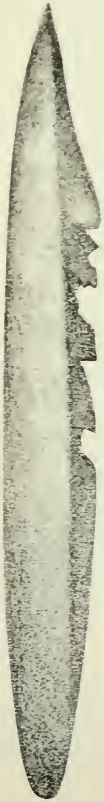
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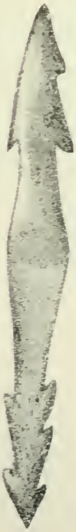
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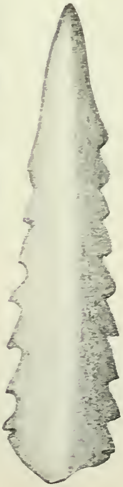
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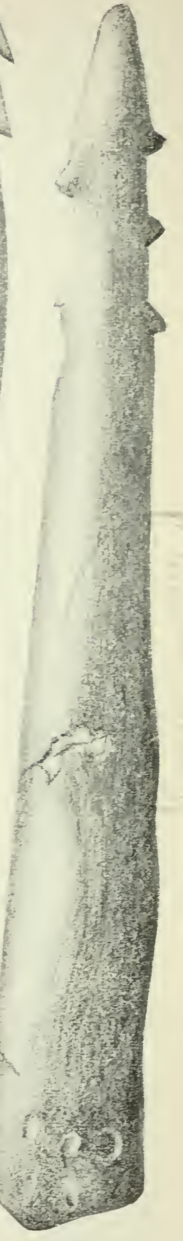
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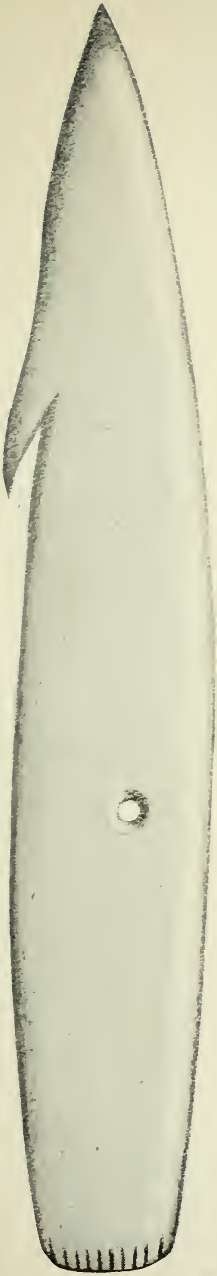

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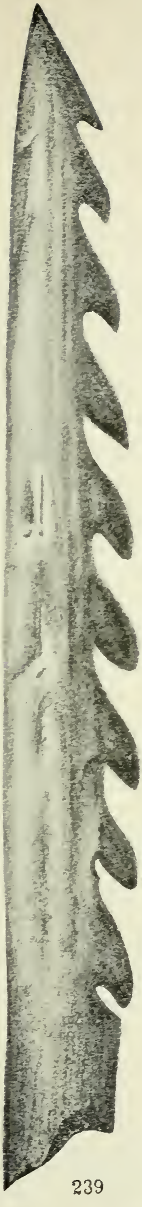

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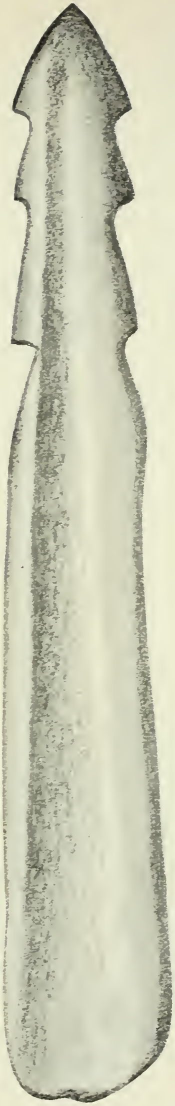

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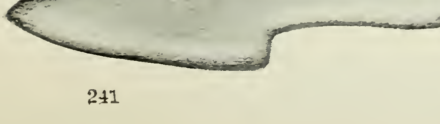

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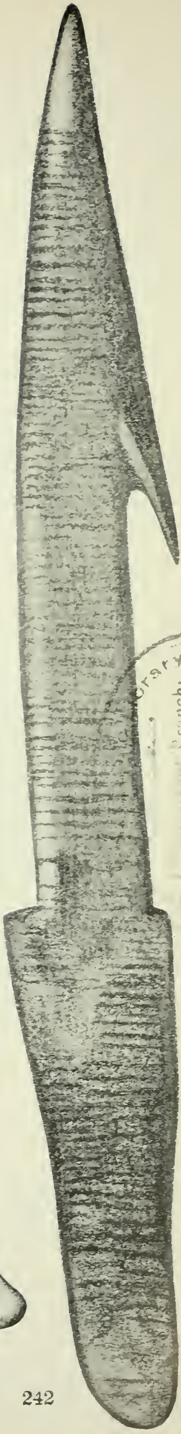

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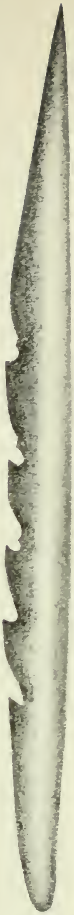

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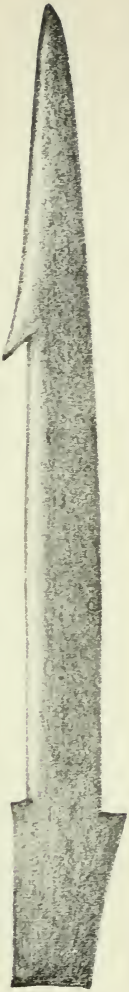

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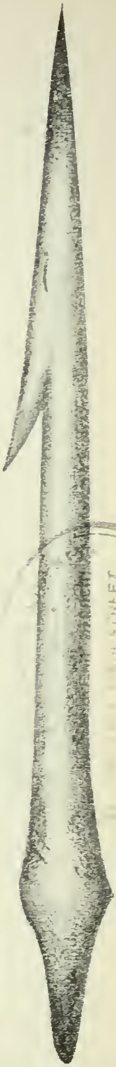

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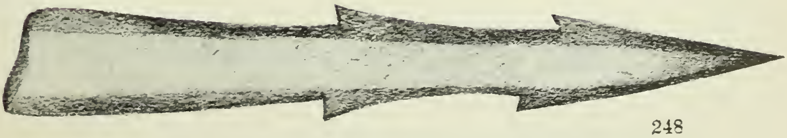

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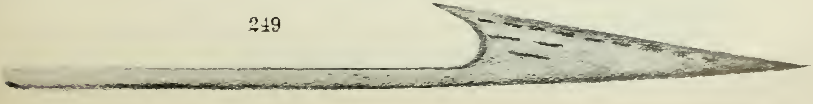

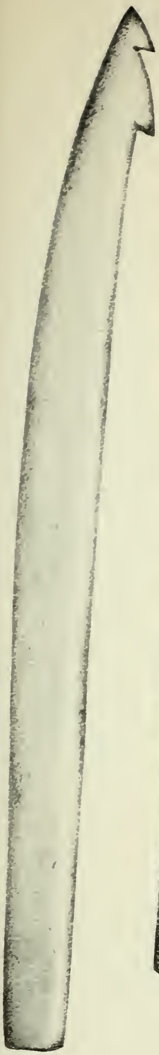
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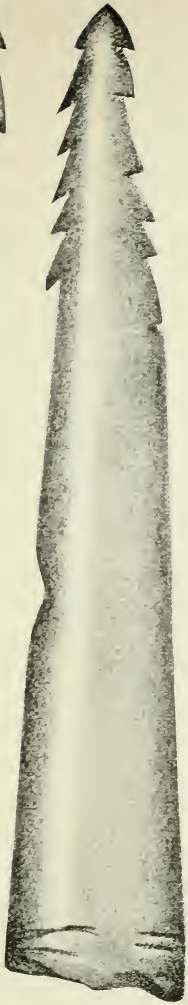
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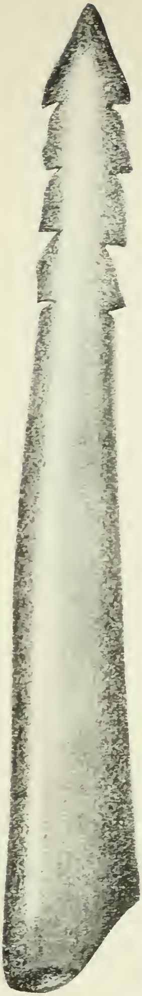
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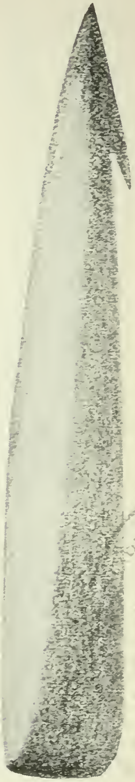
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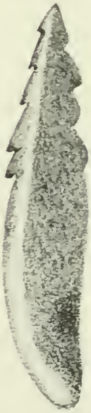
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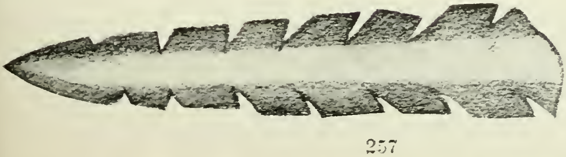
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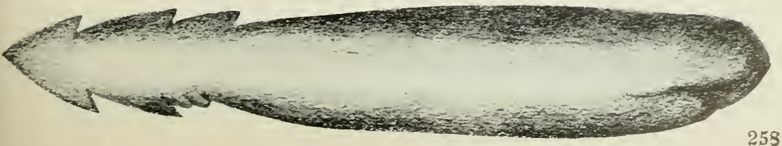
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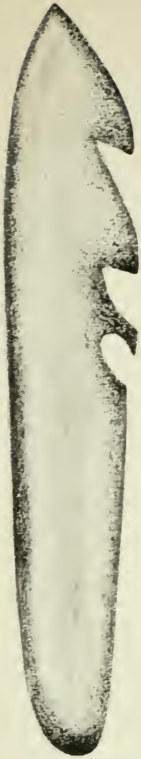
Plate 27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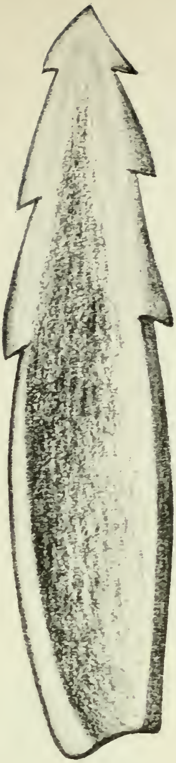
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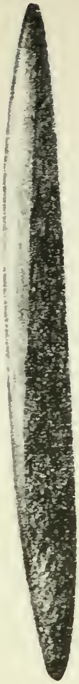
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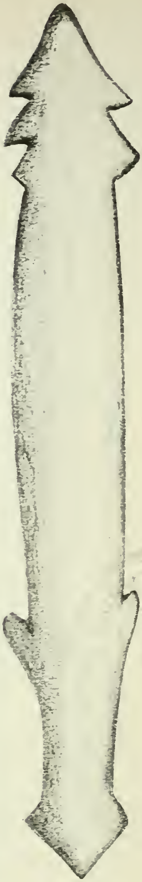
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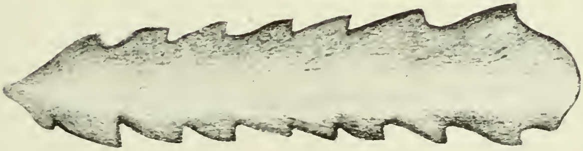
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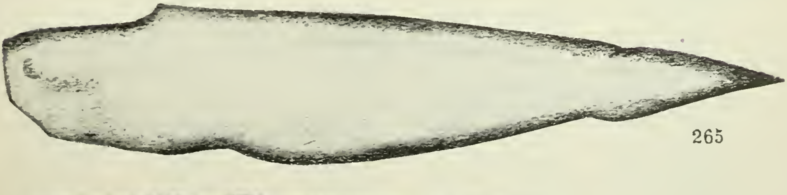
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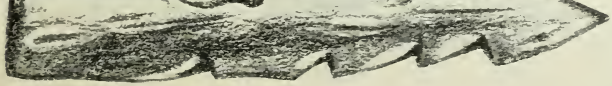
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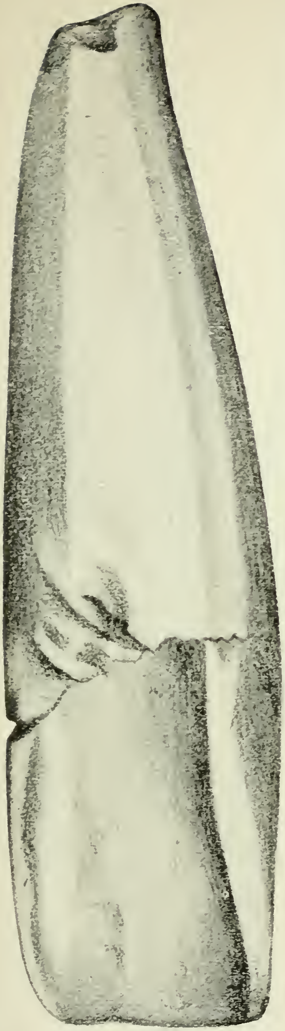
Plate 28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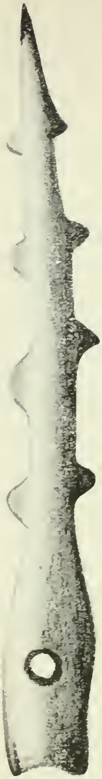
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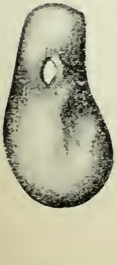
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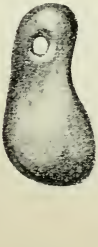
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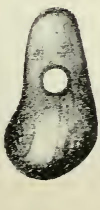
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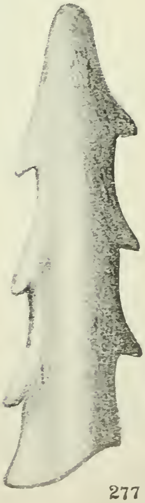
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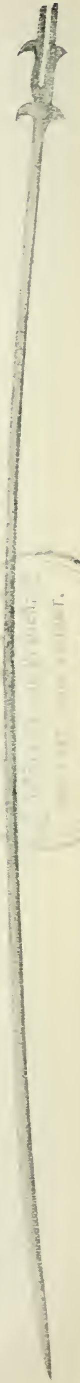
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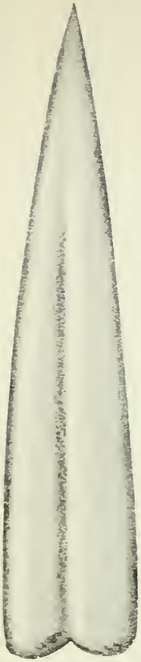

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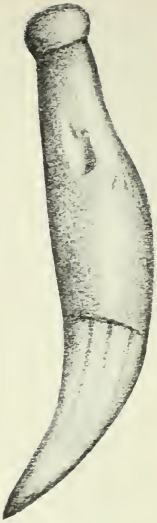

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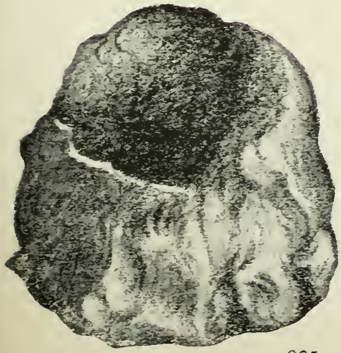

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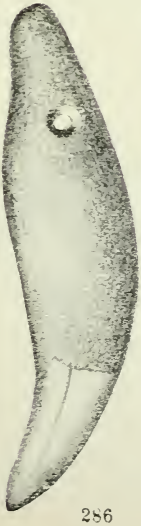

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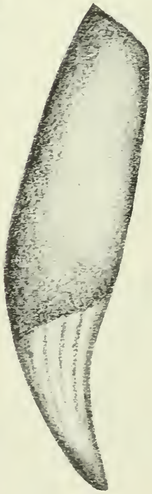

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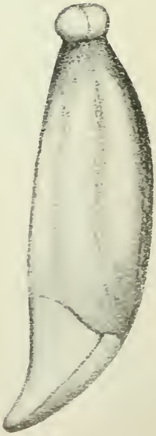

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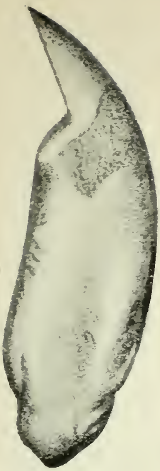

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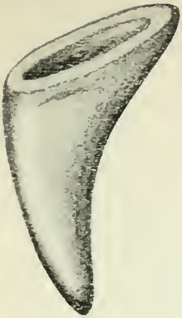

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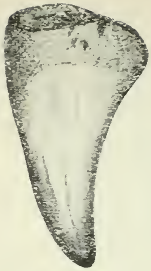

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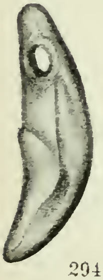

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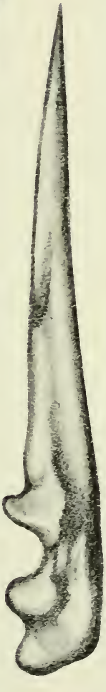

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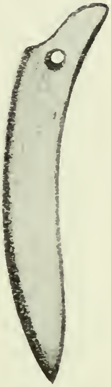

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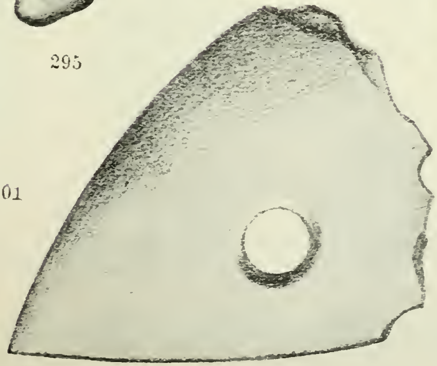

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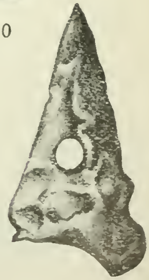

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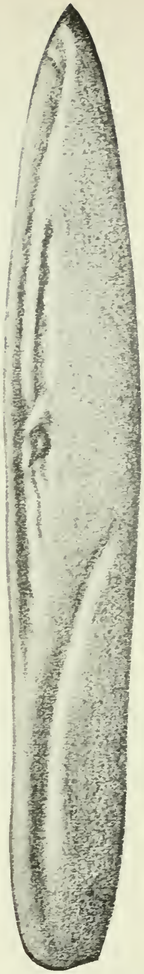

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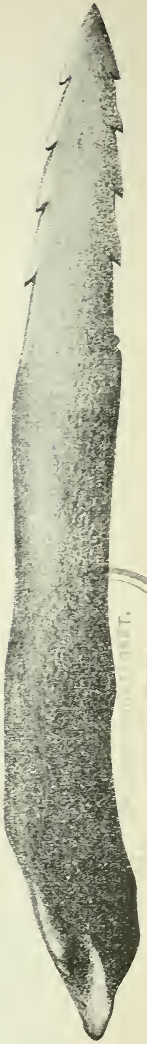

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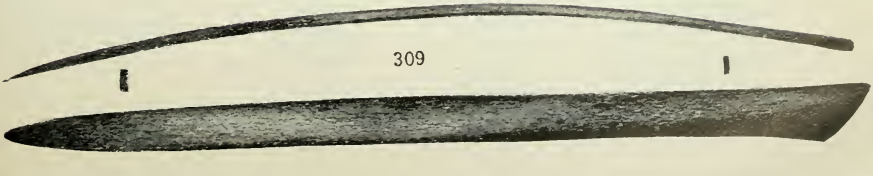

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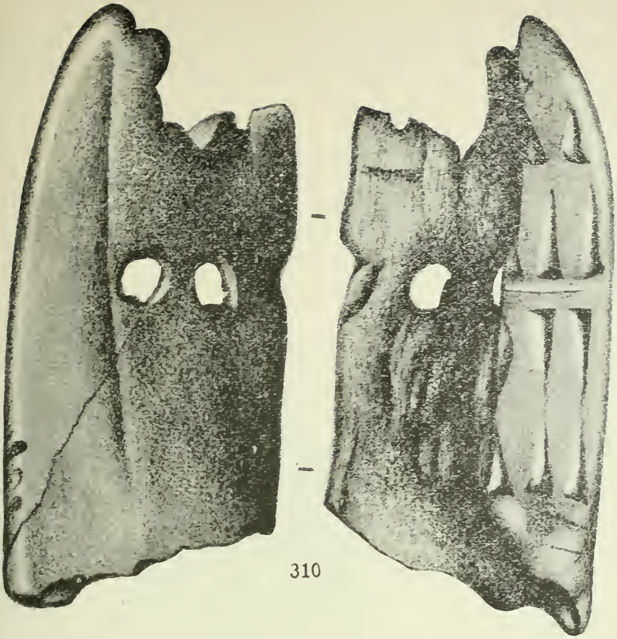
Plate 32



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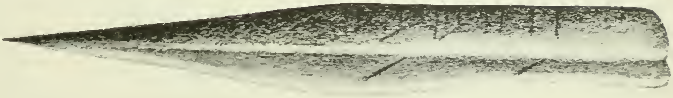

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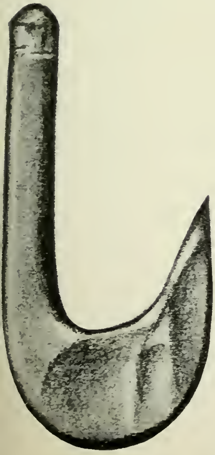

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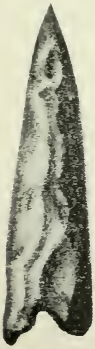

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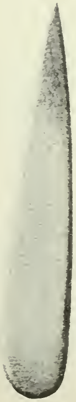

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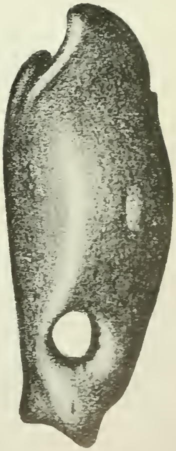

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Plate 33

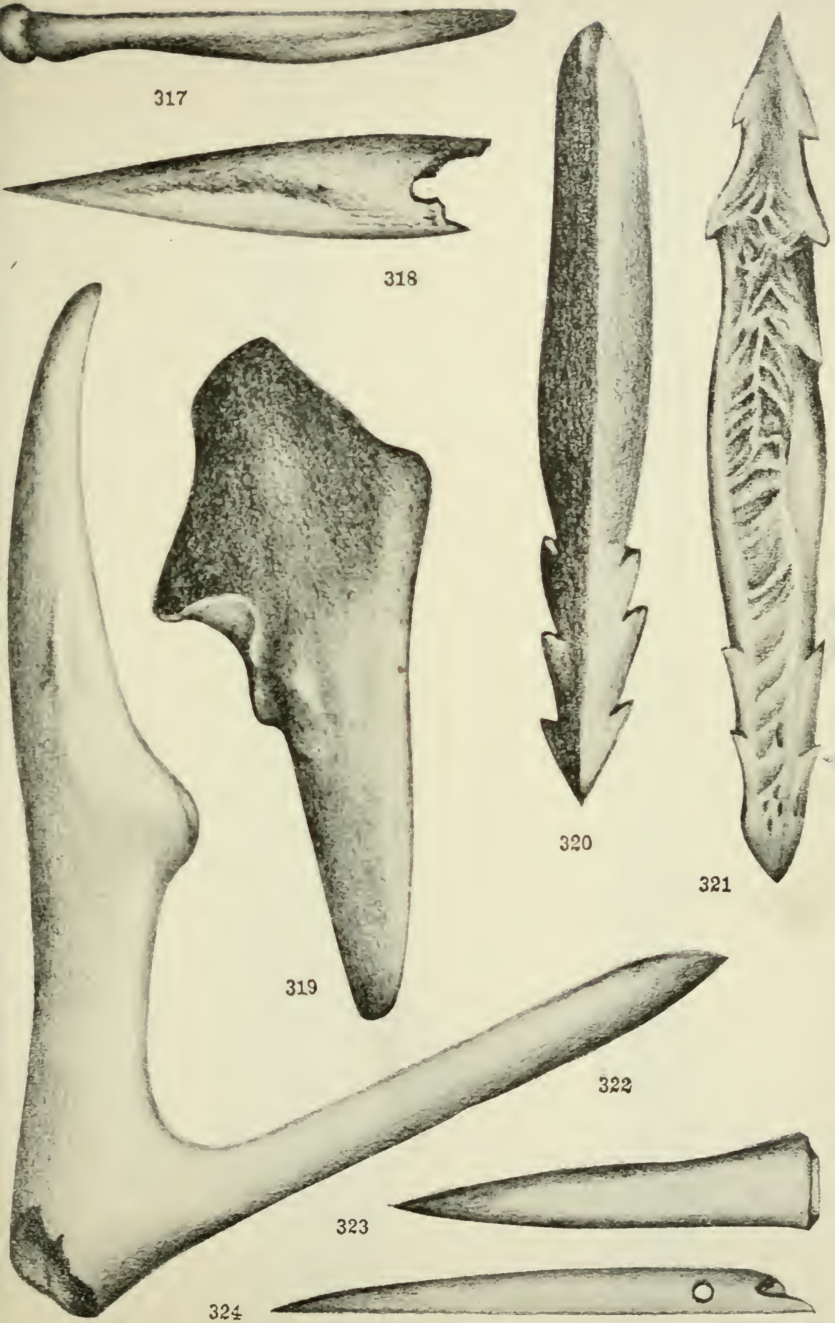
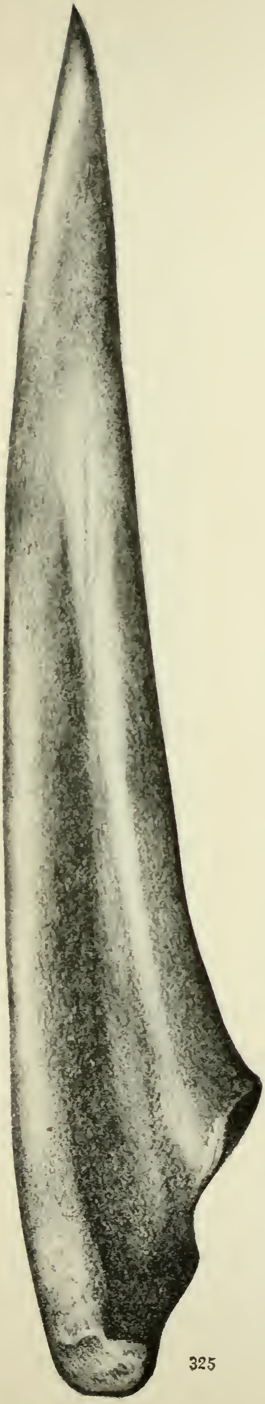


Plate 34



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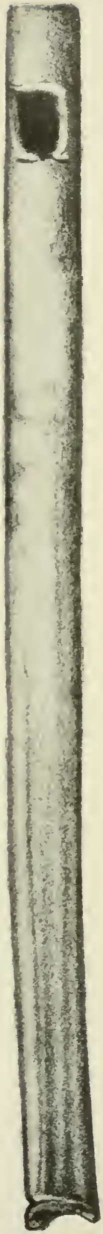

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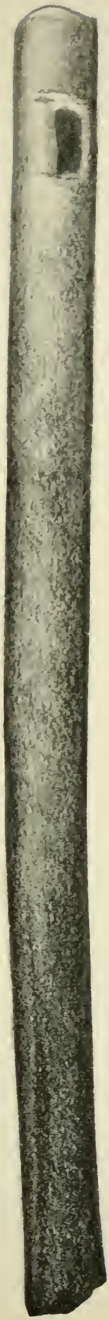
Plate 35



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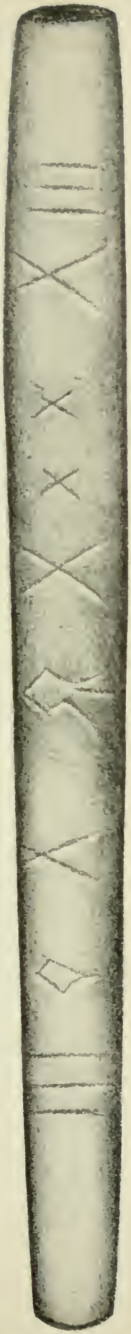

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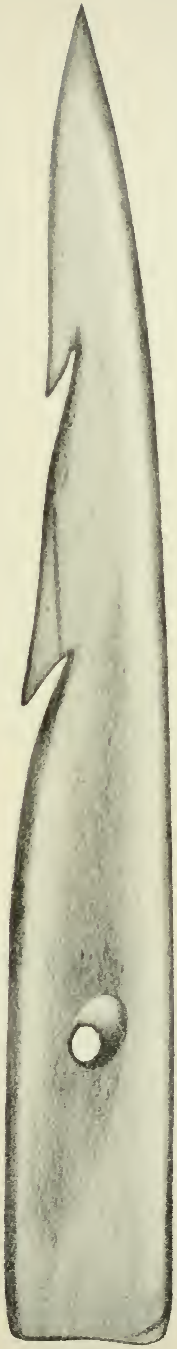

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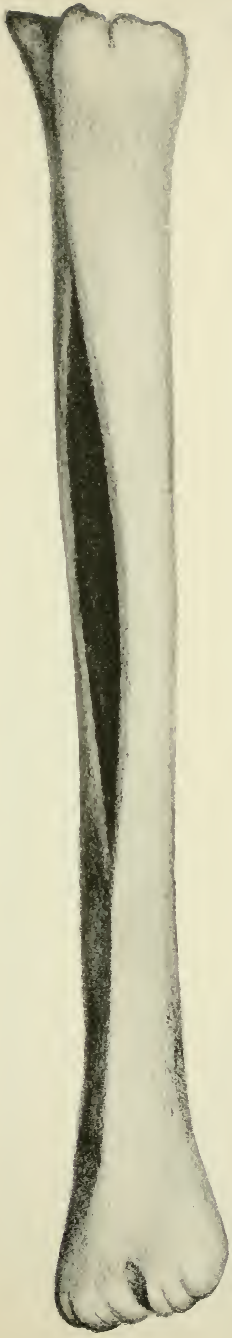

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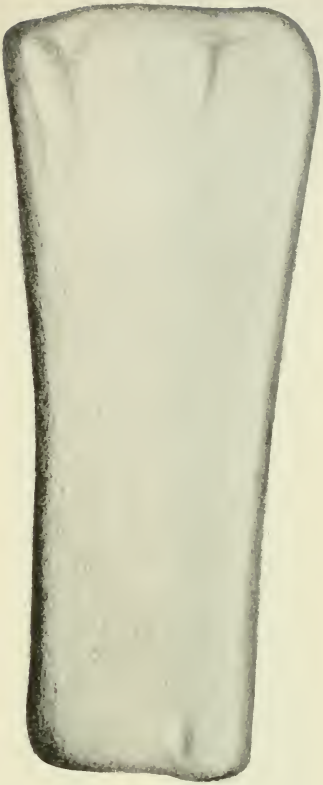

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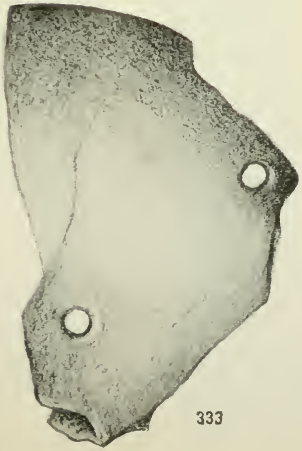

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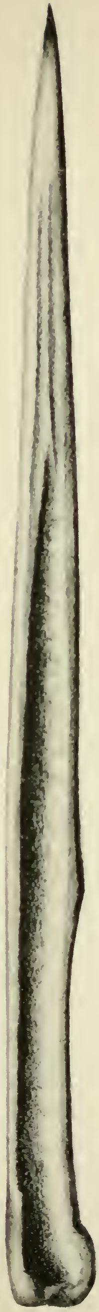

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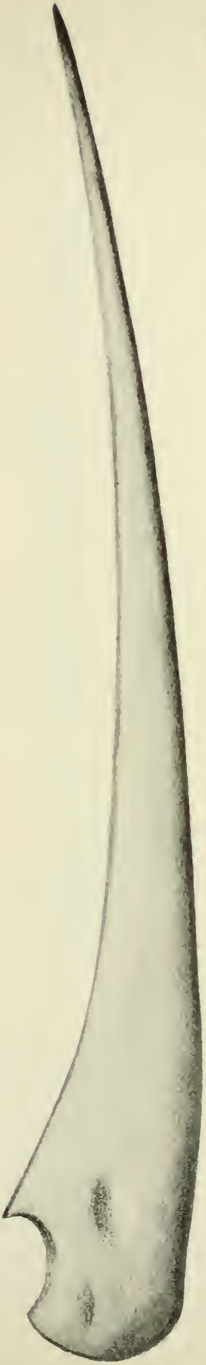

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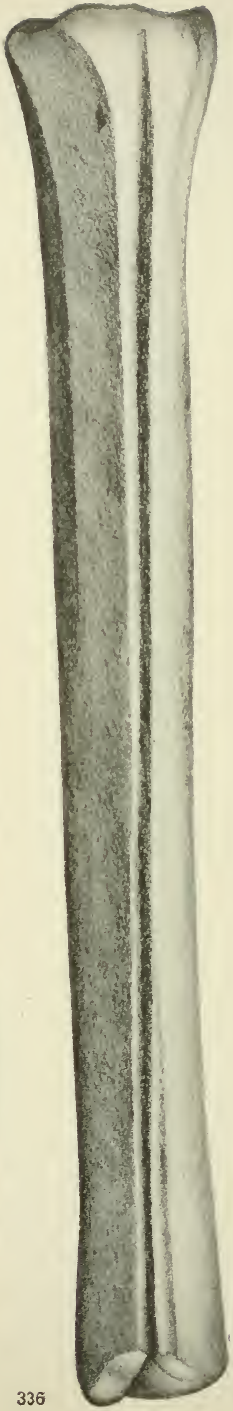

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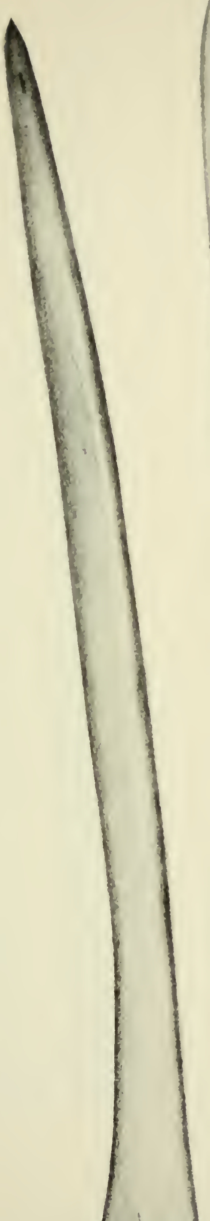

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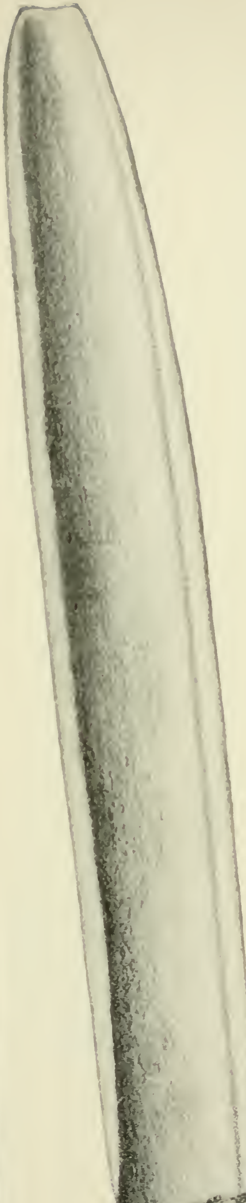

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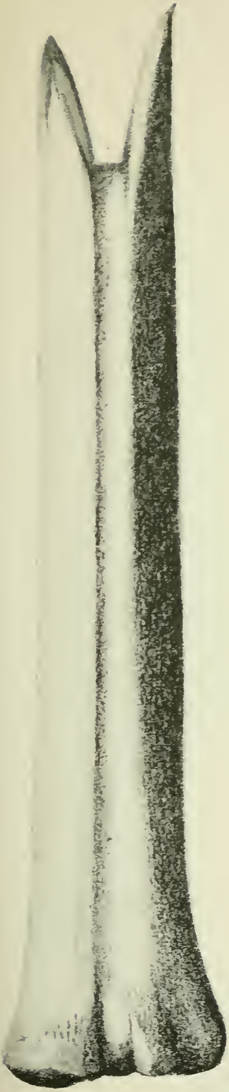
Plate 42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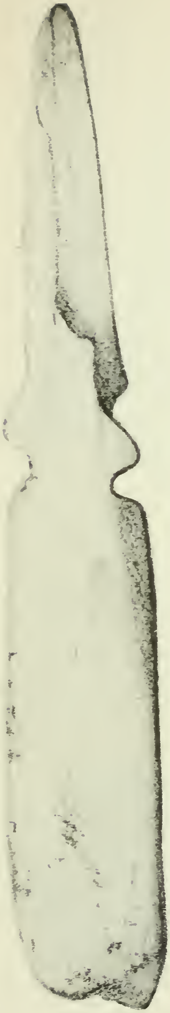
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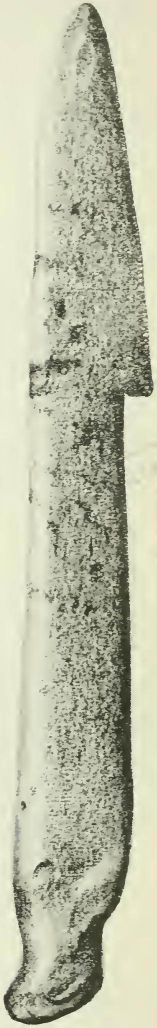
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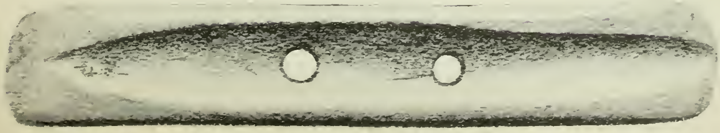
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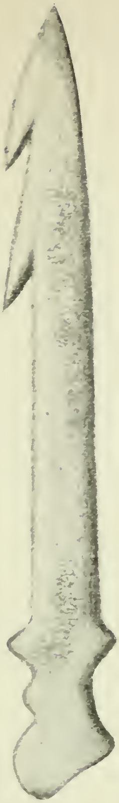

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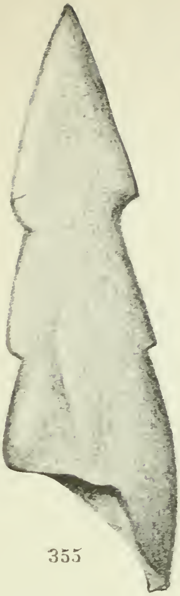

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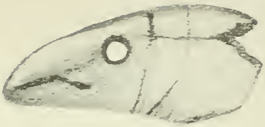

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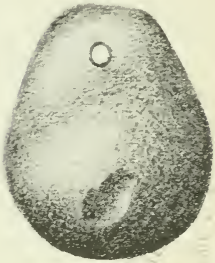

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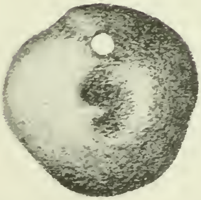

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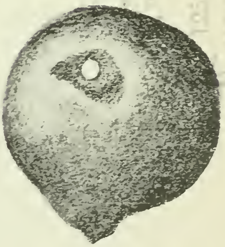

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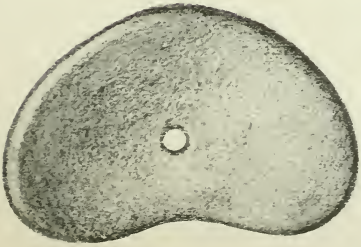

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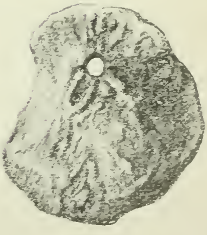

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Geologist's annual reports 1881–date. Rep'ts 1, 3-13, 17–date, O.; 2, 14-16, Q.

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Reports 1-4, 1881-84 were published only in separate form. Of the 5th report 4 pages were reprinted in the 39th museum report, and a supplement to the 6th report was included in the 40th museum report. The 7th and subsequent reports are included in the 41st and following museum reports, except that certain lithographic plates in the 11th report (1891), 13th (1893) are omitted from the 45th and 47th museum reports.

Separate volumes of the following only are available.

Report	*Price*	*Report*	*Price*	*Report*	*Price*
12 (1892)	$.50	16	$1	19	$.40
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In 1898 the paleontologic work of the state was made distinct from the geologic and will hereafter be reported separately.

Paleontologist's annual reports 1899–date.

See fourth note under Geologist's reports.

Bound also with museum reports of which they form a part. Reports for 1899 and 1900 may be had for 20 cents each. Beginning with 1901 these reports will be issued as bulletins.

Botanist's annual reports 1869–date.

Bound also with museum reports 22–date of which they form a part; the first botanist's report appeared in the 22d museum report and is numbered 22.

Reports 22-41, 48, 49, 50 and 52 (Museum bulletin 25) are out of print; 42-47 are inaccessible. Report 51 may be had for 40 cents; 53 for 20 cents; 54 for 50 cents. Beginning with 1901 these reports will be issued as bulletins.

Descriptions and illustrations of edible, poisonous and unwholesome fungi of New York have been published in volumes 1 and 3 of the 48th museum report and in volume 1 of the 49th, 51st and 52d reports. The botanical part of the 51st is available also in separate form. The descriptions and illustrations of edible and unwholesome species contained in the 49th, 51st and 52d reports have been revised and rearranged, and combined with others more recently prepared and constitute *Museum memoir 4*.

Entomologist's annual reports on the injurious and other insects of the State of New York 1882–date.

Bound also with museum reports of which they form a part. Beginning with 1898 these reports have been issued as bulletins. Reports 3-4 are out of print, other reports with prices are:

Report	*Price*	*Report*	*Price*	*Report*	*Price*
1	$.50	8	$.25	13	$.10
2	.30	9	.25	14 (Mus. bul. 23)	.20
5	.25	10	.35	15 (" 31)	.15
6	.15	11	.25	16 (" 36)	.25
7	.20	12	.25		

Reports 2, 8-12 may also be obtained bound separately in cloth at 25 cents in addition to the price given above.

Museum bulletins 1887–date. O. *To advance subscribers, $2 a year or 50c a year for those of any one division: (1) geology, including zoology, archeology and mineralogy, (2) paleontology, (3) botany, (4) entomology.*

Beginning with bulletin 12 bulletins are also found with the annual reports of the museum as follows:

12-15,	48th rep't (1894)	v. 1	32-34,	54th rep't	v. 1	*In press*
16-17,	50th "	"	35-36	"	v. 2	
18-19,	51st "	"	37-44	"	v. 3	
20-25,	52d "	"	45-48	"	v. 4	
26-31,	53d "	"	49-	55th rep't		

Volume 1. 6 *nos.* $1.50 *in cloth*

1 Marshall, W: B. Preliminary List of New York Unionidae. 20p. Mar. 1892. *5c.*

2 Peck, C: H. Contributions to the Botany of the State of New York. 66p. 2pl. May 1887. [*35*]*c.*

3 Smock, J: C. Building Stone in the State of New York. 152p. Mar. 1888. *Out of print.*

4 Nason, F. L. Some New York Minerals and their Localities. 20p. 1pl. Aug. 1888. *5c.*

5 Lintner, J. A. White Grub of the May Beetle. 32p. il. Nov. 1888. *10c.*

6 ——— Cut-worms. 36p. il. Nov. 1888. *10c.*

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7 Smock, J: C. First Report on the Iron Mines and Iron Ore Districts in New York. 6+70p. map 58x60 cm. June 1889. *Out of print.*

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9 Marshall, W: B. Beaks of Unionidae Inhabiting the Vicinity of Albany, N. Y. 24p. 1pl. Aug. 1890. *10c.*

10 Smock, J: C. Building Stone in New York. 210p. map 58x60 cm. tab. Sep. 1890. *40c.*

Volume 3. 5 *nos.*

11 Merrill, F: J. H. Salt and Gypsum Industries in New York. 92p. 12pl. 2 maps 38x58, 61x66 cm, 11 tab. Ap. 1893. *40c.*

12 Ries, Heinrich. Clay Industries of New York. 174p. 2pl. map 59x67 cm. Mar. 1895. *30c.*

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—— Dictyonine Hexactinellid Sponges from the Upper Devonic of New York.

—— The Water Biscuit of Squaw Island, Canandaigua Lake, N. Y.

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Felt, E. P. 17th Report of the State Entomologist 1901. *In press.*

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Merrill, F: J. H. Geologic Map of New York. *In preparation.*

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Beauchamp, W: M. Metallic Implements of the New York Indians. *In press.*

Whitlock, H. P. Guide to the Mineral Collections of the New York State Museum.

Clarke, J: M., & Ruedemann, Rudolf. The Guelph Formation and Fauna of western New York. *In preparation.*

Clarke, J: M. Catalogue of Type Specimens of Paleozoic Fossils in the New York State Museum. *In press.*

University of the State of New York

New York State Museum

Frederick J. H. Merrill Director

Bulletin 55

METALLIC IMPLEMENTS

OF THE

NEW YORK INDIANS

LIST OF AUTHORITIES ON METALLIC IMPLEMENTS

The following works are referred to in the bulletin by the abbreviations in the left margin.

Abbott	**Abbott, C. C.** Primitive industry. Salem (Mass.) 1881.
Abbott. Copper.	——— Use of copper by the Delaware Indians. (*see* American naturalist, 1885, 19:774)
Barber	**Barber, Edwin A.** Antiquity of the tobacco pipe in Europe. (*see* American antiquarian, 1879, 2: 1)
Beauchamp	**Beauchamp, W: M.** The good hunter and the Iroquois medicine. (*see* Journal of American folk-lore, 1901, 14: 153)
Belknap	**Belknap, Jeremy.** Biographies of the early discoverers of America. 1798. New York reprint n. d.
Boyle	**Boyle, David.** Notes on primitive man in Ontario. Appendix to report of minister of education for Ontario. Toronto 1895.
Cammerhoff	**Cammerhoff, J: F:** Diary of the journey of Br. Cammerhoff and David Zeisberger to the 5 Nations from May 3-14 to August 6-17, 1750. Manuscript in the N. Y. state library, translated from the original in Bethlehem Pa. by Miss Clara Frueauff.
Cartier	**Cartier, Jacques.** Short and brief narration of the navigation made by the commandement of the king of France, to the islands of Canada, Hochelaga, Saguenay, and divers others which are now called New France (*in* Hakluyt's prin-

	cipal navigations) Lond. 1600. (*see* Dawson, Sir J: W. Fossil men and their modern representatives. Lond. 1883)
Champlain	**Champlain, Samuel de.** Voyages; tr. fr. the French by C: P. Otis. Bost. 1878. (*see* Prince society. Publications. 2:236)
Cheney	**Cheney, T. A.** Ancient monuments in western New York. (*see* New York state cabinet of natural history. 13th annual report. 1859. *in* Senate documents 1860. no. 89 [e])
Clark	**Clark, J. V. H.** Onondaga; or, Reminiscences of earlier and later times. Syracuse 1849.
Colden	**Colden, Cadwallader.** History of the five Indian nations of Canada. Lond. 1755.
Dawson	**Dawson,** *Sir* **J: W.** Fossil men and their modern representatives. Lond. 1883.
Frey	**Frey, S. L:** Were they mound-builders? (*see* American naturalist. Oct. 1879, 13: 637-44)
Frey. Letters	———— Letters to W. M. Beauchamp.
Hazard	**Hazard, Samuel.** Pennsylvania archives, 1664-1790. ser. 1. Phil. 1852-56.
Hoy	**Hoy, P. R.** How and by whom were the copper implements made? Racine 1886.
Jordan	**Jordan, Francis.** Aboriginal wood working. (*see* Numismatical and antiquarian society of Philadelphia. Proceedings. Phil. 1891. p. 76)
Kellogg	**Kellogg, D. S.** Aboriginal dwelling-sites in the Champlain valley. (*see* American association for the advancement of science. Proceedings. 1887. 36: 308)
Larkin	**Larkin, Frederick.** Ancient man in America. n. p. 1880.
Loskiel	**Loskiel, G: H:** History of the missions of the United brethren among the Indians in North America; tr. fr. the German by C. I. La Trobe. Lond. 1794.
Martin	**Martin, John.** Letters to W. M. Beauchamp.
Moore	**Moore, C. B.** Certain sand mounds of the St John's river, Florida. (*see* Academy of natural sciences of Philadelphia. Journal. Phil. 1894. 10: 5)
Moorehead	**Moorehead, W. K.** Prehistoric implements, a reference book. Saranac Lake. 1900.
O'Callaghan	**O'Callaghan, E. B.** *ed.* Documentary history of the state of New York. Alb. 1849-51.

O'Callaghan. Col. hist.	——— Documents relative to the colonial history of the state of New York. Alb. 1853-87.
Perkins	**Perkins, G: H.** Archaeology of the Champlain valley. (*see* American naturalist, 1879, 13: 731)
Radisson	**Radisson, P. E.** Voyages . . . being an account of . . . travels among the North American Indians fr. 1652-1684. Bost. 1885. (*see* Prince society. Publications)
Rau	**Rau, Charles.** Articles on anthropological subjects. Wash. 1882.
Rau. Aborig.	——— Ancient aboriginal trade in North America. Wash. 1882.
Rau. Arch.	——— Archaeological collection of the United States national museum. Wash. 1876.
Relation	**Relations des Jésuites.** Quebec 1858. More easily accessible in Burrows's fine translated edition Cleveland.
Simms	**Simms, J. R.** Frontiersmen of New York. Alb. 1882.
Smith	**Smith,** *Capt.* **John.** Generall historie of Virginia, etc. Lond. 1624.
Squier	**Squier, E. G.** Antiquities of the state of New York with a supplement on the antiquities of the West. Buffalo 1851.
Stone	**Stone, W: L.** Life of Joseph Brant—Thayendanegea. N. Y. 1838.
Strachey	**Strachey, William.** Historie of travaile into Virginia, Britannia, etc. Lond. 1849. (*see* Hakluyt society publications)
Thomas	**Thomas, Cyrus.** Report on the mound explorations of the bureau of ethnology. Wash. 1894.
Van Curler	**Van Curler, Arent.** Arent Van Curler and his journal of 1634-35; ed. by Gen. J. G. Wilson. Wash. 1896. Later journal in O'Callaghan, v. 13. The name is usually spelled Corlear or Corlaer.
Van Epps	**Van Epps, P. M.** The mutilation of archaelogic finds. (*see* American antiquarian, 1894, 16: 110)
Van Epps. Letters.	——— Letters to W. M. Beauchamp.
Weiser	**Weiser, Conrad.** Report of journey to Onondaga in 1743. (*see* Pa. archives)
Williams	**Williams, Roger.** Key into the language of America; or, An help to the language of the natives in New England. Lond. 1643. There are several American reprints, the best being that of the Narragansett club, edited by Trumbull.
Wilson	**Wilson, J. G.** Arent Van Curler and his journal of 1634-35. Wash. 1896. Published by American historical association.

METALLIC IMPLEMENTS OF THE NEW YORK INDIANS

The stone and bronze ages of Europe have little reference to America except in a very broad sense. Using stone implements here from the earliest times to the present day, men may have used copper also in New York when the whites came, as some others had done centuries before. There had been a time when durable or massive implements were made of this. Customs changed. The later New York aborigines knew little or nothing of these implements, and others employed the material only in an ornamental or reverential way. The earlier nations did not despise this use, and well wrought articles for personal adornment are found in many parts of the United States and Canada. South of our national limits beautiful early articles of silver and gold occur. Recent metallic ornaments are frequent in New York, but none have been reported of native copper except beads.

Most of the early discoverers had something to say of copper ornaments, but these may not have been of native metal in all cases. When the Cabots landed at Newfoundland or Nova Scotia in June 1497, they observed that "the inhabitants had plenty of copper," probably the native metal. When Verrazano visited the coast of New England in 1524, he saw many articles of wrought copper, highly esteemed for their color and beauty. The source of these may be doubtful. Cartier found no copper among the Iroquois of Montreal on his visit there in 1535, but heard of it. "They took the chayne of our capitaines whistle, which was of silver, and the dagger-haft of one our fellow mariners, hanging on his side being of yellow copper guilt, and showed us that such stuffe came from the said river. . . Our capitaine shewed them redde copper, which in their language they call Caquedaze, and looking towarde that countrey, with signes asked him if any came from thence, they shaking their heads answered no; but they shewed us that it came from Saguenay, and that lyeth cleane contrary to the other."—*Dawson*, p. 37

There may have been misunderstandings on both sides, but the plain statement is that this people knew copper and had a name for it, though they had none themselves. When Bartholomew Gosnold was at Cape Cod in 1602 he saw a young Indian with plates of copper hanging from his ears. These may have come from European contact, but Gosnold did not suggest this. Farther south they were visited by natives, one of whom wore a copper plate, a foot long and half as broad, on his breast. Others had copper pendants in their ears. John Brereton added to this, accounts of their beads, chains, arrows and other things, and said that not one lacked something of the kind. Another described pipes partly of copper, much as Hudson did in New York a few years later. Belknap says of these statements:

> All these Indians had ornaments of copper. When the adventurers asked them, by signs, whence they obtained this metal, one of them made answer by digging a hole in the ground and pointing to the main; from which circumstance it was understood that the adjacent country contained mines of copper. In the course of almost two centuries no copper has been discovered; though iron, a much more useful metal, wholly unknown to the natives, is found in great plenty. The question, whence did they obtain copper? is yet without an answer.—*Belknap*, p. 151

To this it may be said that the arrows, tubes, belts and pipes of copper, as described by Brereton, are all represented on recent Iroquois sites, and may fairly be considered as European articles, furnished by some unknown early trader.

When it is said that Henry Hudson saw "copper tobacco pipes" among the Indians of New York bay, he may have mistaken those of bright red clay for this metal, or they may have come from the same unknown trader. They were not afterward mentioned by any one, and none of native metal have ever been found. The natives could not have cast them, and it would have been extremely difficult to make them by hammering. The copper ornaments seen in this voyage may have had the same source. The brass pipes which Roger Williams thought the Narragansetts made may well be classed with these. They are never mentioned inland, and this affects the question of origin, but every article described above was in use by the Iroquois in the 17th century. The arrowheads of 1602 are said to be "much like our broad arrowheads, very workmanly done," and brass arrowheads are spoken of by others.

Native copper articles are rare along the New York seacoast and in our mounds, and perhaps are found more rarely still on camp sites. They seem to have been lost in travel. Apparently implements of native copper have not been made in the interior of New York within 400 or 500 years. This conjecture may be changed at any time, though well founded now. The Iroquois of Montreal knew of this metal in 1535, but had none. The Atlantic coast Indians were then more fortunate, either having European or home sources of supply, or communication with the Lake Superior mines, from which the Iroquois proper were cut off. Both these things are probably true.

For the last we may remember that the larger part of the Huron-Iroquois family were somewhat isolated, the Algonquins surrounding them and for a long time keeping some of them under. No members of the Iroquois family lived west of Lake Huron, but their foes did. So they told Cartier that in the country of metals "there be Agojudas, that is as much to say, an evill people, who goe all armed even to their fingers' ends." These wore the aboriginal armor and were continually at war. The Iroquois were then unwarlike and commanded no access to the mines.

The question of a home supply merits attention. Copper occurs in mines, but so it does in scattered fragments. There are even unprofitable copper ores in New York, but no ledges of this metal. Nodules of several pounds weight have been found in Connecticut and New Jersey, and some may have been used and prized by the aborigines near the coast. Farther north there is little doubt that all articles came from Lake Superior at an early day, and they have such marked peculiarities as to make it probable that they were commonly wrought into shape in that vicinity. Occasional rude pieces found in New York also show this was not always the case.

Soon after Quebec was founded Champlain mentioned a piece of very handsome and pure copper given him by an Algonquin. It was a foot long. The great discoverer said, "He gave me to understand that there were large quantities where he had taken this, which was on the banks of a river, near a great lake. He said that they gathered it in lumps, and having melted it, spread it in sheets, smoothing it with stones."—*Champlain*, 2:236

Presumably this refers to Lake Superior, and the melting merely to softening the metal by heat. The statement lacks precision in these ways, but it would have been possible for an eastern Algonquin while in alliance or friendship with the Hurons to reach Lake Superior.

A succeeding statement is more precise. Radisson wintered in 1658 on the shore of that great lake, and mentioned the native copper several times. He seems to refer to ornamental forms when he speaks of a "yellow waire that they make with copper, made like a starr or a half-moon."—*Radisson*, p. 188, 212. This would bring the making of native copper ornaments far within the historic period, but there is no notice of implements. In the same year occurred the visit which brought Lake Superior copper plainly to view. This was made by an Algonquin chief living on the Saguenay, who had passed 10 years in the country of the Nipisiriniens, and whose name was Awatanik. Thence he went to Lake Superior in 1658, spending the following winter there. Two Frenchmen returned from this lake in 1660 with 300 Algonquins, but they said nothing about copper, though they had wintered there also.

The first definite Jesuit report of Lake Superior ore is in the *Relation* of 1660. In that year a French missionary met the Algonquin mentioned, just returned from that region, where he had gone in 1658. He found there "copper so excellent that it is found fully refined, in pieces as large as the fist." The inference is that the Indians east of Michigan had little knowledge of this before. The *Relation* of 1667 contains the journey of Father Claude Allouez to Lake Superior in 1665. He reached the lake September 2, and went on to say:

> The savages respect this lake as a divinity, and sacrifice to it . . . They often find at the bottom of the water, pieces of pure copper, weighing from 10 to 20 pounds. I have seen these many times in the hands of the savages, and as they are superstitious, they regard them as so many divinities, or as presents that the gods who are at the bottom of the water have made them to be the cause of their good fortune; it is for this that they keep these pieces of copper wrapped up among their most precious movables; there are some who have preserved them more than 50 years; others have had them in their families from time immemorial, and cherish them as household gods.

The truth seems to be that the interior aborigines had ceased to use native copper implements more than 300 years ago, some resuming their use at a much later day. Where native copper was known it had become almost sacred, not to be used in common ways. Farther east it was little known, occurring on no village sites in New York, and rarely in camps.

The missionary did not then see the great copper rock projecting from the water, of which he had been told, but later travelers did. He recorded the fact that passers-by cut pieces from this. This is described in the *Relation* of 1670. "Advancing to the end of the lake, and returning a day's journey along the southern side, one sees at the water's edge a rock of copper which weighs at least seven or eight hundred pounds, so hard that steel will scarcely penetrate it. When however it is heated, it is cut like lead."

There are many other mentions of plates and masses of copper seen, but these need not be quoted here. One other quotation will be made to show the sacred character that it had gained, after having had common uses. This is from the same *Relation:*

> At that time the savages told a story of a floating island which approached or receded with the wind. Four men reached this one day and prepared their dinner in their usual way. Heating the stones they found and casting them into the water to make it boil, they discovered that they were copper and that this lay plentifully around. After eating they loaded their canoe with pieces and plates of the metal and were soon homeward bound. They had not gone far when a great voice called to them, asking why they carried off the cradles and the diversions of his children. "The plates of copper are the cradles, because among the savages they are made of only one or two boards joined together, on

which they lay down their children; and these little bits of copper which they were carrying away, are the playthings and diversions of savage children, who play together with little stones." One said it was the Thunder spoke; one the god Missibizi; another the water men. Two Indians died on the way home, the others soon after, and no one dared visit the floating island again.

A friend of the writer, the late Dr P. R. Hoy, of Racine Wis. published two papers in 1886 on the important questions, *How and by whom were the copper implements made?* The first paper he read in 1876, the second in 1882. That they were not cast he showed, because the aborigines could not produce the heat required, but copper could be softened by judicious applications of heat and cold. He thought that implements were hammered or pressed into shape in stone molds, and made successful experiments. Lastly, he thought most native copper articles were made after the white men came, a conclusion not so easily proved. His arguments will not be reproduced here, but some of his facts will be mentioned.

Copper articles were made near Lake Superior for export and trade elsewhere. In 1882 there were found 26 copper implements close together, under a small pile of stones at the Sault Ste Marie. In the lot were six awls from 3 to 6 inches long, five knives of various sizes, and 16 axes, hammers and chisels. These must have been made for trade. For recent use he cites witnesses to the copper implements used by the modern Chippewas and Winnebagoes. One Indian agent certified that when he first came among the latter, "many of them carried lances headed with copper, and it was quite common to see arrows headed with copper." These points may have been like those used by the Iroquois 250 years ago. Out of over a hundred mounds opened near Racine none contained copper. Among hundreds of native copper implements in the Perkins collection not one came from a mound. This led him to conclude that such articles were later than the mound builders.

Great quantities of native copper-ornaments have been found in Ohio mounds. Mr Warren K. Moorehead took three or four thousand spool-shaped ornaments out of the Hopewell mounds alone. These are properly mound articles, thus far unknown in New York. He found there many articles of sheet copper, sometimes stamped or ornamented, naturally suggesting recent material but clearly aboriginal. It is definitely known that native copper was beaten thin enough for turning the edges under and overlaying prepared forms. Out of one of these mounds Mr Moorehead took a copper ax 22 inches long and 6 inches wide. This weighed nearly 38 pounds, not quite seven times as heavy as the largest New York implements of this kind.—*Moorehead*, p. 325

Wisconsin naturally affords the greatest supply, being near the ancient mines. Mr F. S. Perkins sold 143 local copper implements to the Wisconsin historical society, and in 1886 had another collection of over 600 exclusive of beads. The Hamilton collection is also notable, containing most New York forms, as well as small fishhooks and unusual ornaments. The University of Pennsylvania has 560 articles gathered from a space of 5 acres in Wisconsin. The writer met with a curious Wisconsin collection at Manitou Col. The articles were flat and symmetric, cut from rolled or beaten copper and showing none of the irregularities of early implements. Some found at Brewerton N. Y. are suggestive of these. Native copper articles occur in Michigan and Minnesota. In the latter they are well distributed and include eastern forms but are not numerous. Canadian implements are nearly related to those of New York, and the shores of Lake Ontario and the St Lawrence have afforded many. Others occur on both sides of Lake Champlain.

New England is fairly represented and has some notable forms. Pennsylvania has a number of implements and ornaments. Dr C. C. Abbott knew of 128 copper articles in New Jersey in 1885, but they were not all fully wrought. They included 11 celts, five spears, eight arrowheads, 13 bracelets, 70 beads and 21 pieces of copper. At one time he had thought it "not improbable that all the copper articles found along the Atlantic coast were brought from western localities. A careful resurvey of many localities where ordinary Indian stone implements occur in abundance, and correspondence with collectors in various parts of New Jersey and eastern Pennsylvania now convince me that the use of copper, as implements and ornaments, was much more common than I supposed, and that among the Delaware Indians were many coppersmiths." He cites examples of articles which he thought were made of New Jersey copper, this not being rare. One mass in Somerset county weighed 100 pounds, and it also occurred in the eastern counties of Pennsylvania. Finished ornaments were found in graves with others unfinished, and in one grave was a copper nodule of 13 ounces. His final opinion is thus expressed:

> It would appear, then, from an examination of the copper objects found in Pennsylvania and New Jersey, that the weight of probability is strongly in favor of their home manufacture; and the similarity of the forms to those taken from areas where mounds occur is another fact in favor of the rapidly growing impression that the builders of these earthworks and the Indians of the coast were essentially one people.—*Abbott*, p. 774-78

Dr Abbott's statements are weighty, but there are other facts which may prevent their full acceptance. No argument will be held on these now, one important fact clearly appearing, that there were supplies of native copper accessible to the coast Indians which were not available to those in the interior of New York.

Mr David Boyle remarks that copper articles are comparatively rare in the province of Ontario and that the line of distribution seems to be through the Georgian bay and along the Ottawa river. Few have been reported in the Neutral country, lying near the north shore of Lake Erie. As a matter of fact the Toronto collection has many fine examples of early and recent forms. The latter are not so frequent as in New York, owing to the overthrow of the Huron, Neutral and Tobacco nations in the middle of the 17th century. The country was depopulated just as these were beginning to be most freely used. Those of native copper have a few forms not reported in New York. Some fine articles come from Wolfe island, opposite Cape Vincent. As this lies nearer the New York mainland than that of Canada, these might well be described and illustrated as New York specimens. Those found in the mound at Brockville are merely separated from the New York shore by the St Lawrence, and are like those found elsewhere in the state.

The collection of Mr A. E. Douglass, of New York city, includes 78 copper objects, mainly from Ohio. He does not state how many are of native copper, but divides them into spears, celts, knives, hammers, vessels, beads in lots, bracelets, implements, ornaments, tubes, pipes, arrows and grooved axes. Of these one arrow, one implement, two bracelets and six ornaments are from New York. Nearly half are from Ohio.

Prof. George H. Perkins has described and figured some of the native copper implements of Vermont and Dr Abbott has illustrated a celt from Maine. Some copper articles have been found in Manitoba, but these do not essentially differ from those farther east. Excepting a small space in Ohio distinguished by quite remarkable articles, there is thus a very large district in which nearly all native copper relics are practically of the same types.

It must be remembered that the occurrence of these in the territories of historic nations is no evidence that they were made by them. They are scattered all through the territory of the Iroquois family, but are not found on the village sites of that people, early or late. The presumption is that they were made by an earlier people still. They are found in the land of the Lenape, but we must connect them with known villages of that people before we can assert they were made by them. As far as evidence goes, in the eastern states they were usually lost by the wayside or in temporary camps, or else were buried with the dead. An observation by Dr D. S. Kellogg on those of Lake Champlain is worthy of attention. "Of copper spearheads, hatchets and gouges about two dozen have been found. These have been entirely surface or field finds. Not a single copper relic has as yet (1887) been obtained from a dwelling site." This is not invariable elsewhere, but is a general rule having importance. In New York, at least, all native copper articles may be safely called prehistoric.

As copper was prized for ornamental purposes from the beginning it seems to have been a very acceptable gift from early voyagers. Any metallic ornament would not only be prized but preserved, and there is good reason to suppose that such things, given to the Iroquois of Hochelaga and other places by Cartier or his men, were afterward brought to New York. This will appear in its proper place.

When trade with the Dutch and French opened more fully in the early part of the 17th century, metallic implements and ornaments were in great request. One has only to look over old bills of supplies and purchases to see how great was their quantity and variety. For ornamental purposes bronze, brass and nearly pure copper long had sway. About the beginning of the 18th century silver began to take its place, and for 150 years held its own as the fashionable material. Loskiel spoke of this. "The rich adorn their heads with a number of silver trinkets of considerable weight. This mode of finery is not so common among the Delawares as the Iroquois, who, by studying dress and ornament more than any other Indian nation, are allowed to dictate the fashion to the rest."—*Loskiel*, p. 52

A great number of forms became common, and all were lavishly used. Some were very beautiful and were tastefully employed. At first they were made by the whites, but the Iroquois soon learned the art and had their own smiths in every village. Such ornaments were abundant till the civil war, when the high price of silver brought many to the smelting pot. It is difficult to obtain even the smaller ornaments now.

Prof. Cyrus Thomas has wisely called attention to the large supply of copper furnished to the coast Indians by early explorers and colonists, and to the use made of it. He says:

> A careful examination of the copper articles found in the mounds should lead any one, not swayed by some preconceived notion, to the conclusion that many of them were made of copper brought over to America by Europeans, which would as a matter of course indicate (if they do not pertain to intrusive burials) that the mounds in which such specimens are found were erected subsequent to the discovery by Columbus. The

> copper articles found in the mounds and ancient graves belong, as may be readily seen by those who will inspect them, to two usually very distinct classes; those of the one class evidently hammered out with rude stone implements; those of the other class showing as plainly that they have been made from quite thin, smooth, and even sheets.—*Thomas*, p. 710

He has no doubt that some important mounds were made in quite recent times, and cites many early authorities to show how great a supply of metals was afforded to the Indians by European explorers, traders and colonists. In Virginia they were lavish with copper, and Smith said that in a short time goods "could not be had for a pound of copper which before was sold us for an ounce."—*Smith*, 1: 166. Strachey said that Powhatan wished to monopolize the copper trade:

> Whereas the English are now content to receive in exchange a few measures of corn for a great deal of that mettell (valuing yt according to the extreme price yt bears with them, not to the estymacion yt hath with us), Powhatan doth again vend some small quantity thereof to his neighbor nations for one hundred tyme the value, reserving, notwithstanding, for himself a plentiful quantity to leavy men withal when he shall find cause to use them against us, for the before-remembered weroance of Paspageh did once wage fourteen or fifteen weroances to assist him in the attempt upon the fort of Jamestowne, for one copper plate promised to each weroance.—*Strachey*, p. 103

It appears that Powhatan had articles or pieces of native copper, but they were not abundant nor as beautiful as those of the English, and so he coveted these. Capt. John Smith often referred to this trade in copper and iron, but his most important statement was in connection with his visit to the Tockwoghes in 1608. These lived far up Chesapeake bay, and were at war with the Massawomeks, a branch of the Iroquois family, and probably a part of the Eries. The Susquehannas were friends of the Tockwoghes, and of the latter he said: "We saw among these people many knives, hatchets, and pieces of brass, which they said they had from the Sasquesahanocks, a mighty people, and mortal enemies to the Massawomeks." He elsewhere describes his visit with the Susquehannas, adding that, "many descriptions and discourses they made us of Atquanahucke, Massawomekes, and other people, signifying they inhabit the river of Cannida, and from the French to have their hatchets and such like tools by trade."

The Virginia Indians told him that this hostile people lived "on a great salt water, which by all likelihood is some part of Commada, some great lake, or some inlet, or some sea that falleth into the South Sea." In his well known account of his battle on Lake Champlain in 1609, the great French explorer observed that the Mohawks had axes of iron, though that year included his own first visit to New York and the first Dutch voyage up the Hudson river. He said: "The Iroquois repaired on shore, and arranged all their canoes, the one beside the other, and began to hew down trees with villainous axes, which they sometimes got in war, and others of stone, and fortified themselves very securely." We are thus not to limit the possible use of European metallic articles in New York to the year 1609. It is every way probable that a few implements or ornaments reached the interior many years before, and in some instances these may have been found.

Attention has elsewhere been called to early wrecks along the Atlantic coast, whence some metal was obtained. More of these occurred than ever were reported. Fishermen from Europe haunted the mouth of the St Lawrence and the points and islands adjacent but did not publish their voyages. They were not exploring, but getting a living. In a similar way, at a later day, there were French and Dutch traders penetrating the wilds of New York, of whose names and adventures we are equally ignorant. For their own profit they said as little as possible.

It is somewhat surprising to see how rapidly our knowledge of the early use of copper has grown. Squier and Davis brought to light many copper ornaments and articles in their mound explorations, the report of which was published in 1848. The report of Foster and Whitney on the Lake Superior district, published in 1850, showed something of the early work done there. Schoolcraft was at his best in that region. Lapham added much in writing on the antiquities of Wisconsin in 1855. Col. Whittlesey published his account of ancient mining on Lake Superior in 1863, yet Dr Charles Rau said, in his paper entitled *Ancient aboriginal trade in North America:* "The Smithsonian institution has been receiving for years Indian antiquities from all parts of North America, yet possessed in 1870 only seven copper objects: namely, three spearheads, two small rods, a semilunar knife with convex cutting edge, and an ax of good shape."—*Rau. Aborig.* p. 94. There are more there now, and yet but few compared with some private collections.

The Lake Superior copper sometimes contains small masses of native silver. Where this is present the source of the supply may be known but its absence is no test. Most articles show raised spots and lines, retaining a hammered appearance. The softer metal between is corroded. The stone hammers and rude wooden tools of the early miners are yet found where they worked centuries ago. Col. Whittlesey thought 500 years had passed since that time; Mr Lapham allowed a much more recent period. It will be seen that the Jesuit *Relations* speak of work done there in the latter half of the 17th century. While it is probable that many implements were made in adjacent districts, it is perfectly clear that masses of metal were carried away to be cut up and wrought elsewhere. Such blocks have been found and the Jesuits mention those that they had seen or owned.

In common with others the writer at first could hardly resist the belief that the early copper articles brought to him were cast in a rude matrix of sand. Much of the surface appears like a rough casting, and the longitudinal raised lines could be attributed to cracks in the mold. Dr Hoy thought the metal was subjected to a great pressure in a matrix of stone. The prevalent opinion now is that all our implements of this kind were hammered into shape. One surface is usually flat but the reverse quite commonly has a central and longitudinal ridge. On this surface the workman hammered along one side and then changed ends to hammer the other, the slightly oblique blows producing a central ridge. Dr Thomas Wilson, of the Smithsonian institution, told the writer of his experiments in such forging, and gave a high rank to the aboriginal workman. He found peculiar difficulties in bending over the lower edges to form the socket. This feature appears in some European bronzes locally termed winged celts. Some New York articles show greater skill than any copper celts in Washington.

The Indians, however, soon learned to cast metals, if reports are true. Roger Williams said of those in New England: "They have an excellent Art to cast our Pewter and Brasse into very neate and artificiall Pipes." Such pipes were found in New York, but melting brass has difficulties, and such a native art may be doubted. Metal was sometimes used for lining pipes, both of horn and stone, and there are other examples where stone and metals were otherwise combined. All these are recent.

The distribution of early copper articles in New York is somewhat uniform on the whole, excluding the lower Hudson and Long Island. Cattaraugus and Chautauqua counties have some reputation in this way but the rather indefinite reports seem exaggerated. A good antiquarian says that in 50 years residence he has seen but one native copper arrowhead there. Onondaga county and the drainage of the Genesee river have afforded many. Fine examples have come from Jefferson county and the islands of the St Lawrence. Lake Champlain and the upper waters of the Hudson are well represented by these early relics. Some have been found on the Susquehanna.

It seems certain that the Iroquois had no metallic articles which they did not have from the whites. These they gladly adopted and the advent of the Dutch became a new era in their life. All Europeans were termed by them *Ascronni*, Makers of axes, but this was specifically the name of the Dutch. This was the definition of Father Bruyas, an excellent authority. Megapolensis interpreted it differently: "They call us *Assyreoni*, that is Cloth-Makers, or *Charistooni*, that is Iron-Workers, because our People first brought Cloth and Iron among them."—

Hazard, p. 517. It seems better to make the word mean Knife-makers than to refer it to axes. Axe is *atoko.* In the old Mohawk *assire* was cloth, and *assere* knives, so that either definition would stand as given by Megapolensis.

Loskiel said, "Many of the Delawares and Iroquois have learned to make very good rifle-barrels of common fowling-pieces, and keep them likewise in good repair." They also learned to make silver ornaments from coin, and even to insert colored glass when desired.

Native copper articles

It will be seen that articles of native copper stand distinctly apart from all others, and should be considered by themselves. With slight exceptions those of New York have a useful character, and were probably all made before the close of the 15th century. Some found on early Huron sites in Canada may have had a more recent date and some may well have been known to the later Hurons, reaching them through western trade. The form suggesting our case knife has been thought to show a knowledge of European art, but specimens of this are rare both in Canada and New York. The copper hooks of Wisconsin imply the same, but no early examples of these have appeared here.

One fact must be borné in mind in speaking of the scarcity of any early metallic articles. In early pioneer days in New York recent Iroquois village sites were prized sources of supply for iron and brass. Reference to this will be made later. Native copper articles have proved useful or salable, and many a one has gone into the crucible. Some of the finest figured by the writer have been barely rescued from such a fate, and others lay for years in the farmer's tool chest, serving some rude end. The present scarcity is therefore no absolute test of former numbers, though they were probably small. This is partly inferred from the opening of new sites, where other articles abound. Those found seem to have belonged to transient visitors and not to a settled people.

A large proportion of these remarkable articles have the celt or chisel form, usually narrower at one end than the other, but sometimes with the edges parallel. The finest brought to the writer's attention was once owned by the late J. S. Twining, who sold it to some one outside the state. Fig. 61 is reduced one half in length from the outline furnished by Mr Twining, the full length being $14\frac{3}{4}$ inches and the breadth $1\frac{7}{8}$ inches. The greatest thickness of the lateral edge is $\frac{5}{8}$ of an inch, the total thickness being about double this. It weighs $5\frac{1}{2}$ pounds. One surface is flat, and the other ridged as usual. The ends are thinner than the center but one is beveled to a sharp cutting edge. It was plowed up by Mr Farnham at Oxford N. Y. in 1856, and Mr Twining bought it of his heirs. It is to be regretted that this unusually fine article did not remain here.

Fig. 7 is a reduced drawing of another copper celt, almost the counterpart of the preceding except in size. Its weight is 2 pounds, 14 ounces, or a little more than half that of the last, but it is but about a fifth shorter. This implement is slightly beveled in thickness toward each end, one of these having a dull chisel edge. It is $11\frac{1}{2}$ inches long, $1\frac{9}{16}$ broad and $\frac{13}{16}$ thick, being a little wider at the cutting edge where it suddenly and slightly expands. One surface is nearly flat but a little depressed along the center; the other ridged as usual but slightly hollowed on each side of the central line of the ridge. This is a common feature. There are the usual flattened rough lines, showing traces of the hammer. The first owner cut the upper corner to test the material, a very frequent practice. This fine celt was found in May 1880 by Mr J. F. Shultz on lot 22, town of Clay N. Y. and was at first sold for old copper, but soon came into the Bigelow collection, where it may now be seen.

Fig. 3 is of the same general form and is much reduced. It is ridged on one side but is narrower at one end than at the other. This is in the Smithsonian institution where it is credited to Keeseville N. Y. Dr D. S. Kellogg locates it more exactly at Auger pond, Keeseville, where it was found many years ago by a Mr Hackstaff. It is $9\frac{5}{8}$ inches long and has a medial width of $1\frac{1}{2}$ inches, being somewhat smaller than the last.

Fig. 5 is also reduced, and the lateral edges gradually contract. It is $7\frac{7}{8}$ inches long with a medial width of $1\frac{3}{8}$ inches. The cutting edge extends to a central point and the bevel to the ridge commences almost at the flat surface, which is the one shown. The first owner unfortunately filed down most of the rough ridges on one side of the back. It was found on the farm of B. C. Case, north of Lake Neatawantha and toward Oswego river, near Oswego Falls. It is now in the Bigelow collection. The bevel at the point is more abrupt than usual.

Fig. 9 is another fine celt in the same collection, which embraces a large proportion of the native copper articles illustrated here. It was found by Mr Charles Woods on his farm, about 3 miles due east of Baldwinsville N. Y. lot 82, Lysander. This was in April 1878. The hard ridges are black, appearing mostly on the flat side, where a narrow central one extends from end to end. The under surface is ridged as usual and it is somewhat pointed at both ends, the cutting edge being almost rectangular in the center. The extreme length is nearly 7 inches, the greatest width $1\frac{1}{2}$ inches and the thickness $\frac{1}{2}$ inch. Below the center the sides are nearly parallel as far as the cutting edge and most of the small ridges are toward that end.

Fig. 10 was in the collection of Mr Albert Hopkins of Phoenix, but its present abode is unknown. It was found in Oswego county in 1878 and has undergone some filing, without seriously affecting its character. On the flat surface represented the hard, longitudinal ridges are unchanged. The expanded and rounded edge on this side is slightly hollowed like a shallow gouge. The back is rounded, not distinctly ridged. The extreme length is $5\frac{3}{4}$ inches, medial width 1 inch, width of edge $1\frac{5}{16}$ inches and thickness $\frac{3}{8}$ inch.

Fig. 53 is a parallel edged copper celt in the collection of Mr John Martin, Plattsburg N. Y. It was found on the Jones farm 2 miles north of that place. The surface is beveled toward each end, moderately sharpened at one, and is weathered and green. It weighs $7\frac{1}{2}$ ounces. The owner says: "One end was pounded by a hammer, which shows that one end was lapped."

Fig. 39 has also parallel edges and is quite broad for its length. It is in A. H. Waterbury's collection, and was found between Bridgeport and Oneida lake. The length is $4\frac{5}{8}$ inches and the average width $1\frac{3}{8}$ inches. The edge is rounded and slightly expanded.

Fig. 40 is still wider in proportion and suggests an ax. It belongs to Mr Albert Rose of Manchester Center, Ontario co. N. Y. and was found on the Rose farm, a little over a mile north of the old ford at Canandaigua outlet. Mr Irving W. Coats made the drawing in 1892. He says it is of native copper and is 3 inches long. The extreme breadth is $1\frac{5}{8}$ inches, being a little less at the head where there is a rounded depression. The cutting edge is curved, as usual.

Fig. 23 has the modern ax form and came from Livingston county, N. Y. It is of native copper but has unfortunately been ground down. This is in the Smithsonian collection and is of actual size.

Fig. 60 is taken from Squier's *Antiquities of the state of New York* (p. 122) and is here of actual size. He said:

> One of the most interesting relics which has yet been discovered in the state, is an ax of *cast copper*, of which fig. 25 is a reduced engraving. The original is 4 inches long by $2\frac{1}{2}$ broad on the edge, and corresponds in shape with some of those of wrought native copper, which have been found in the mounds of Ohio. From the granulations of the surface it appears to have been cast in sand. There is no evidence of its having been used for any purpose. Its history, beyond that it was plowed up somewhere in the vicinity of Auburn, Cayuga county, is unknown. No opportunity has yet been afforded of analyzing any portion, so as to determine whether it has an intermixture of other metals. It appears to be pure copper. An inspection serves to satisfy the inquirer that it is of aboriginal origin; but the questions when and by whom made, are beyond our ability to answer. There is no evidence that the mound builders understood the smelting of metals; on the contrary, there is every reason to believe that they obtained their entire supply in a native state, and worked it cold. The Portuguese chronicler of Soto's expedition into Florida, mentions copper hatchets, and rather vaguely refers to a "smelting of copper," in a country which he did not visit, far to the northward, called "Chisca." The Mexicans and Peruvians made

hatchets of copper alloyed with tin. It would seem that this hatchet was obtained from that direction, or made by some Indian artisan after intercourse with the whites had instructed him in the art of working metals. At present it is prudent to say that the discovery of this relic is an anomalous fact, which investigators should only bear in mind, without venturing to make it the basis of deductions or inferences of any kind.

Mr Squier was one of the most accurate and judicious of writers and these words may have held in check the extravagant surmises and theories in which some of his contemporaries indulged. At the same time some of our best authorities have determined that many articles which appear to have been cast were really brought into shape by hammering. The first impressions are of a rude casting.

Dr Charles Rau at first allowed the casting of this article.—*Rau*, p. 92. In collecting his papers in 1882 he made a prefatory note as follows:

Reference is made to a *cast* copper ax plowed up near Auburn, Cayuga co. N. Y. and first described and figured by Mr Squier on p. 78 of his *Aboriginal monuments of the state of New York* (Wash. 1849). Several years ago, while in conversation with Mr Squier at his residence in New York I happened to see the same ax lying on the mantelpiece. In handling the object I noticed that a small portion had been removed from it—for close examination by an expert, as Mr Squier informed me. This examination resulted in the discovery that the ax was not cast but hammered into shape from native copper. The former inhabitants of North America, I still believe—notwithstanding all assertions to the contrary—were unacquainted with the art of melting copper.—*Rau*, pref. p. vii

As to modes of working copper and the differences between the native metal and that brought by Europeans, reference may be made to a valuable paper by Mr Clarence B. Moore. He gives analyses of several articles from recent New York sites, but was unable to obtain those of native copper. From other sources some were procured. In that paper he quotes a personal letter from Prof. F. W. Putnam which is of general interest and is therefore reproduced here:

Just after I wrote my little paper on copper in the museum as the beginning of a series of papers on the use of metals,

> copper began to come in from our Ohio explorations in a wonderful manner, until we now have copper in such abundance that a paper on the subject would be a volume. We have it hammered and cut into all manner of shapes—implements and ornaments—and with it have come several lots of ornaments made of meteoric iron—implements and ornaments—and also considerable silver (ornaments) and a little of gold. All these metals are hammered and cut, and we have the copper in all stages from the rough nuggets, through those partly hammered, to the sheets and the objects cut from them. To consider this the work of Europeans is an absurd perversion of the facts before us; and yet just because the facts do not agree with the theories of some who would have all facts drop into their theories, or else throw them out of consideration, these objects are spoken of as unquestionably of European origin, *traded* to our old mound building people of the Ohio valley by whites since the settlement of the country.—*Moore*, p. 220

Prof. Putnam's conclusion is that native copper articles of any kind are to be considered prehistoric if unaccompanied by European relics. Dr Cyrus Thomas has as plainly shown that European metallic articles have been found deep in some large mounds. His remarks have been quoted.

A large proportion of native copper celts gradually expand toward the cutting edge. Fig. 38 is a good example in the Bigelow collection, which was found on lot 99, Lysander, in 1881, not far from Seneca river. The ridged side has more protuberances than usual, and on the flat side a single medial line extends the whole length, with a few small ones near the margin. The thin top is bent over by hammering, showing how it was used. This figure is of actual size, as are all those where no dimensions are given.

Fig. 30 is in the same collection, and has an expanded cutting edge. It was found on the Ouderkirk farm, lot 76, Lysander, near Seneca river, and is quite thick and not very sharp, the edge having been dulled by use. One side is ridged as usual.

Fig. 12 is a very fine celt of this kind, the flat side of which is shown. A hollow above the cutting edge suggests a gouge. This edge is more rounded than usual and the other end comes to a point. The full length is a little over 5½ inches, and the implement is quite sharp. It was found on the Voorhees farm, lot 99, Lysander, in 1881. A lateral view is added.

Fig. 19 is a fine copper celt from Point Alexander, Wolfe island, north of Cape Vincent N. Y. It is much more tapering than most of those described and is 7 inches long. Though just north of our border it was found by one of our citizens and is in the Richmond collection. All along the St Lawrence the occurrence of copper implements on either shore may be considered an accident of travel. They occur on Wolfe island, Tidd's island near Gananoque, at Brockville, and on islands farther down the stream.

Fig. 62 was found on the south side of the Oneida river at Brewerton, and is in the Bigelow collection. It is 5⅜ inches long, and is nearly flat on both sides. There are many linear ridges and it is somewhat sharp at both ends. The broad end had the corner cut by the finder.

Fig. 28 is from Dr Rau's half length of a New York copper celt, fig. 227 of the *Archaeological collection of the United States national museum.* He said of this:

> The most beautiful article of a wedgelike character is a kind of chisel with an expanding, strongly curved edge, which shows a slight concavity, imparting to the implement almost the character of a gouge. The upper surface is nearly even, but the back part presents, as it were, two faces, which join in the middle, forming a longitudinal ridge.

Fig. 4 is from an outline sent to the writer by Dr D. S. Kellogg of Plattsburg N. Y. and shows a rude copper knife or hatchet, having the usual raised lines on both sides. It is reduced in the figure, measuring 3 inches between the extreme points.

Fig. 73 shows a large copper gouge with parallel edges. Perhaps from some flaw in the metal it was partially broken at the upper end and an attempt has been made to cut it off. It was found near Constantia, on the north shore of Oneida lake, about 1850, by Mr James Haynes. It went into the Terry collection. No implement has been found like it here and it is quite deep and thick.

Fig. 1 seems the finest specimen of its class yet found, weighing 3 pounds, 2 ounces, and being a little over 10¼ inches long.

The extreme width is 2 inches and it is 1½ inches wide at the narrow end. The extreme depth is 1½ inches. It is ridged on the lower side and high and sloping flanges form a socket at the broad end. These occupy more than a third of each lateral edge and a broad depression extends between them for 3½ inches, against the angle of which the handle abutted. This feature often appears in spearheads made for similar hafts. It was found by Chester Wells in 1885, a mile south of Granby Center and was long used as a wagon wrench. A small piece was broken out of one of the flanges by him. The point is also now dull, but this might have been so centuries ago. It is now in the Bigelow collection. There is a smaller one like this in the national museum, which Dr C. C. Abbott called "a nameless object." It is 7⅜ inches long and has an extreme breadth of 1½ inches. The flanges occupy full half of the length and the socket measures 3¼ inches to the abutting angle. This came from Somerville N. J. A copper gouge, found in the Brockville mound, Canada, has similar features. In the Toronto collection there is a large adz of the same type but on the whole it is a rare form.

Fig. 21 is a very small article of native copper like a celt, and neatly formed. It is quite flat and was found on the island at Brewerton.

Fig. 22 came from the same place. It is a small cylindric piece of native copper which appears to have been worked, but not into any definite form.

Fig. 75 is a long and somewhat triangular article of native copper, which is flat and of uniform thickness throughout. It may be unfinished but would serve as a rude spear without sharpening. This was found at Union Springs and weighs 1½ ounces. It is 5¾ inches long and the expanded base is nearly an inch wide. This may have been the beginning of a flanged socket.

Fig. 29 is a tube of native copper which may have been ornamental or useful, either as bead or sinker. A section of this is shown. It is rough, and made of a copper plate bent into a cylinder and hammered together. One end is thin. It was found on the Oneida river about 20 years ago but its present owner is not known. The length is 2½ inches.

Fig. 17 is a sharp and slender awl from Mr S. L. Frey's article in the *American naturalist* of October 1879, entitled "Were they mound-builders?" He said:

> It might have been used for piercing holes in buckskin garments but as implements for this purpose were usually made of bone, with the point rounded and sharpened in a similar manner, and as these were obtained with comparative ease and were equally serviceable for sewing purposes, I think that possibly this copper implement had a different, or at any rate an additional use. According to many early writers the natives at the time of the discovery were found in possession of ornaments, necklaces, etc. of pearls, the perforating of which was done with a heated copper spindle. The square shape of this implement indicates that it has been set in a handle, and the point being very smooth, shows use of some kind. That it was intended for a drill of this description seems not improbable when viewed in connection with certain shell relics subsequently found, and which are described in this article.

The great neatness of this implement led to further inquiry and Mr Frey wrote: "The copper awl you figure from my drawing is exact. It is just as smooth and well finished as represented. It is the only prehistoric copper I ever found; in fact the only one, as far as I know, ever found in this section." This illustrates the curious elimination of early travel and habitation in the Mohawk valley. East, north and west of that valley, native copper articles have been often found.

The burial place was of a mixed character, for at the time he found this Mr Frey had not discovered the curious graves and relics which rewarded his labors at a later day. In his earlier digging he had found "at one time, in a grave, 30 arrowheads and a small copper awl." In one of those opened afterward he found copper beads, to be mentioned later. This judicious observer noted the widely different character of the graves, concluding that they could not be those of the same people. It is also to be remembered that there was no large village site close at hand, and that part of the cemetery had been removed before examination. The writer has since examined this awl.

Regarding Mr Frey's general question a few words should be said. But one other awl of this character has been reported from this state and this is much larger. It was a surface find. In other states they have been found in mounds. Prof. Cyrus Thomas reported several of these with illustrations and they closely resemble those of New York. In the Sue Coulee group, Crawford county, Wis. were copper articles with one of the skeletons. "Near the hand of the same skeleton were two long, slender, square copper drills or spindles, one about 9 inches long and ¼ inch thick, pointed at one end and chisel-shaped at the other; the other 7 inches long and pointed at both ends."—*Thomas*, p. 76. In another mound of the same group was a small one of similar character and a large copper ax, with copper beads and an obsidian implement. In one of the Rice lake mounds, Wisconsin, was a similar drill or spindle 7½ inches long and pointed at both ends. In a mound on the Holston river, Sullivan co. Tenn. a copper spindle lay on the head of a skeleton. "It is 11 inches long, ¼ inch in diameter at the thickest part and appears to have been roughly hammered out of native copper with some rude implement. Immediately under the lower jaw were two small copper drills or awls with portions of the deerhorn handles still attached." —*Thomas*, p. 351. These quotations will show the proper place of the New York copper awls.

Native copper spears of two types have a wide range. In some the base is drawn out into a sharp or obtuse point for insertion in the shaft. These are usually notched on the lower edges for attachment by cords. In others the lower edges are raised and bent over, forming an angular socket, neatly made. This is often deepened for a short distance so that the shaft abuts against a shoulder. The flanges usually turn inward, giving a firmer hold. Unless very thin the blade is flat on one side and ridged on the other, and the usual hammered protuberances appear. New York specimens may have one or two notches on each side but some have none. In other states they occur with several deep and narrow notches on either side. Prof. G. H. Perkins has figured a fine example of this kind from Vermont, and Mr Francis Jordan jr of Philadelphia found one remarkable example in 1890 on the eastern shore of Maryland, which is about 12 inches long, ridged and angular, and with six notches on each side of the base. This form has not been reported here. He found a large hoe blade of copper at the same time. The former is figured in the *Proceedings of the Numismatic and antiquarian society of Philadelphia for 1890–91*, p. 128.

Fig. 74 is a curious undulating spearhead obtained by Mr Twining in Ellisburg N. Y. There are double notches on each side of the base and the undulating edges are suggestive of some Scandinavian weapons. It is quite slender for its length, being 7½ inches long with a maximum width of ⅝ inch near the base, which terminates in a sharp point. Those found near the Seneca river often end in this way.

Fig. 35 is a very fine example from the latter region, now in the Bigelow collection. It is one of those drawn by the writer for Dr Abbott's *Primitive industry*, and was found on the Crego farm, just west of Baldwinsville and south of the river, near but not on an early fort site. The writer afterward found a small native copper bead there. The flat side is slightly concave, giving the implement a decidedly curved appearance. The present length is 7¼ inches, but the basal point has been slightly broken. The extreme width is a little over 1½ inches. There is a basal notch on each edge for attachment. Each side of the longitudinal ridge is moderately hollowed, and the usual raised lines appear, the whole implement suggesting a rough casting, an appearance now known to be deceptive.

Fig. 31 is also in the Bigelow cabinet and was found on the Judge Voorhees farm, lot 74, Lysander, in 1875. It has a pointed base, but no notches, and is but slightly ridged. The blade is much thinner than the general base, a common feature with this form. A smaller similar one was found near Beaver lake, about 2 miles northeast of the last locality. This has disappeared.

Fig. 27 is in the same collection and much like the last. It was found in uprooting a large tree in the town of Hannibal in 1878-79.

Fig. 26 is a rough native copper spear with an obtuse point, possibly broken or unfinished. It is in the Smithsonian collection and came from Malta N. Y., west of Saratoga lake.

Fig. 25 is in the same collection, and came from Livingston county, N. Y. The base is not pointed and the implement suggests both the knife and spear. It is slightly rounded, and there are no basal notches.

Fig. 32 is in the Bigelow collection, and was found on R. Adsit's farm, lot 76, Lysander, north side of the river road and toward Beaver lake. Several copper implements have been found near there. This is a small form, flat on on side and rounded on the other. There is a notch on each side toward the pointed base. It is hardly 3¾ inches long but is neatly finished.

Fig. 50 is a thin copper spearhead found half a mile east of Onondaga creek, and nearly a mile south of East Onondaga village, beside an old Indian trail. It is ridged on one side and has a deep notch on each edge near the base. The base is obtusely pointed. It is but 3⅛ inches long, and the edges are nearly parallel and quite sharp. It was found in 1894 by Mr George Slocum, its present owner, and is slightly twisted as a whole.

Fig. 49 has the outline of a pointed ellipse, rather obtuse at the base. One edge has one notch and the other two for attachment. It would have answered well for a knife and is as long as the last. It was found in the town of Venice, Cayuga co. in 1886.

Fig. 44 is another of these small spears, much thicker than the last two. It has a pointed base and opposite notches which are nearly midway in the edges. This was found on the north shore of Oneida lake June 12, 1886, on a point east of Big bay. The writer visited the spot afterward and found arrowheads and drills. The finder was Mr White of Geddes, then superintendent of schools, who soon disposed of it. It is not so distinctly ridged as some, but has the usual protuberances. The length is 3 inches.

Fig. 42 is from a drawing of a small spearhead in the state museum made by Mr R. A. Grider. It was obtained from the collection of A. W. Allen, made on the east side of Cayuga lake. It is ridged, has a single notch in one edge and two in the other, one of the latter being midway. As drawn it is $2\frac{7}{8}$ inches long.

Fig. 55 is another of these short and broad forms. Below the notch on each side the edge projects into a kind of barb. The base is pointed and one surface ridged as usual. It is quite broad for its size, the length being $2\frac{3}{4}$ inches and the width 1 inch. It is in Dr D. S. Kellogg's collection and was found in the town of Peru, Clinton co. N. Y. Many articles of native copper have been found along the west line of Lake Champlain.

Fig. 41 is a longer spearhead with single notches on each edge, and a pointed base. It is slightly ridged on both surfaces, and is well finished. The length is slightly over $4\frac{1}{2}$ inches. This is in the Bigelow collection and was found near the Seneca river in Onondaga county.

There are many of the same general character which have an obtuse base. Fig. 11 differs from most of these, the base suggesting some yet to be described. The outline of this broken implement is much like that of some triangular notched flint arrows, and the surface is flat but has the usual lines on one side. It belongs to the writer and was found near Jack Reef, Seneca river.

Fig. 36 is a shouldered spearhead, without notches and with an obtuse base, which is in the Kellogg collection and came from Chazy. The base is a broad shank, slightly expanding near the end.

Fig. 14 may be either knife or spear, and is in the same collection. It was found at Plattsburg and, like the last, has no notches.

Fig. 65 is also in the Kellogg collection, and is quite large for this form, being $6\frac{1}{4}$ inches long. The other general features are much like those just described. This is from Plattsburg.

Fig. 68 is another slender implement in the same collection which was found on Valcour island in Lake Champlain. There are no notches and but slight shoulders. It is quite slender for the length, which is $5\frac{3}{16}$ inches.

Fig. 57 is in the same cabinet and was found at Schuyler Falls. It has a long broad shank, is distinctly shouldered, and quite irregular in outline.

Fig. 59 was found at Plattsburg and is in the Kellogg collection. It is distinctly ridged and has a notch on each edge near the base. The latter is obtusely pointed.

Fig. 16 closely resembles the last but is much larger. It was drawn by Mr Grider from a fine spearhead belonging to Mr W. B. Murphy of Schoharie county.

Fig. 34 is a fine spearhead found on the Randall farm near Saratoga lake and now in the state museum. The base is slender and pointed and the whole implement is narrow for its length, which is 7⅜ inches.

Fig. 52 is in the collection of John Martin, Plattsburg, who says: "It was found when the new road was constructed past the United States army post at Plattsburg some 15 years ago. The place was on the right bank of the Saranac river some ½ mile from the mouth." It is slightly ridged but is thin for its length, which is 6 3/16 inches. The shank is obtuse and it is moderately shouldered. Corrosion has turned it green. Mr Martin furnished fine photographs of his copper articles.

Three flat spearheads in the Waterbury collection and found together on the north side of the river at Brewerton, are of unusual character, and may be comparatively recent. No analysis of the metal has been made. They are quite flat, and are deeply notched at their broad bases, even more than one already mentioned. Fig. 71 shows one of these. There are a few striae, and the edges are sharp and beveled. The general appearance suggests a recent origin, with some peculiar features, but no age has been claimed for or assigned to them. Fig. 43 and 45 are the other two.

Fig. 20 is thus far unique in New York, though found sparingly elsewhere. It is a thick gouge, 2¾ inches long by 2 3/16 broad, having the sides turned into contracting flanges. The back is curved and the cutting edge abruptly beveled. It was found on the left side of the road from Port Byron to Howland island near the Seneca river bridge. Some call this form a spud and it has been previously reported only from Wisconsin and Minnesota. It now belongs to Mr Harris of Rome N. Y.

Fig. 24 has an outline much like that of our modern knives. It is rare in New York but seems more common in Canada and elsewhere. It was found in Cayuga county and has a few of the usual raised lines. This is a good example of this form.

Fig. 78 is a much larger one in Mr W. L. Hildburgh's collection, found in Livingston county. His note is that "a meadow lark's wing was found bound on this." What evidence there is of this is not stated. Such knives have been found originally wrapped in fur, retaining traces and sometimes portions of this, for the salts of copper often preserved perishable articles.

There are many New York examples of native copper articles having a socket for the handle, made by turning up the edge. A fine example is in the Smithsonian collection, which was found in Tompkins county, N. Y. Fig. 2 shows this much reduced, the actual length being 9 inches. The socket is less artistically wrought than some and the back of the blade is rounded. It is quite thin for its size.

Fig. 13 is a very fine spearhead of this type, found near Seneca river, lot 75, Lysander, in 1893. It is in the Bigelow collection and is 6⅛ inches long. The back is ridged and the socket moderately expanded toward the base. The flanges are neatly turned inward and there is the frequent angle between the socket and blade against which the shaft abutted. The inside surface of the socket is perfectly smooth, as though the shaft had decayed within it. A lateral view of this is given and no better example has been found here.

Fig. 33 is another found on Wolfe island, opposite Cape Vincent N. Y., now in the collection of Dr A. A. Getman of Chaumont N. Y. The finder bored a hole in the base for suspension, but the writer omitted this misleading feature. The socket expands toward the base as usual and occupies nearly half the length of the implement. It is also depressed but has not so abrupt a shoulder as the last.

Fig. 37 is a very thin copper knife or spear of this type, found near Cold Spring on the Hudson and belonging to Mr James Nelson of that place. It is $2\frac{3}{5}$ inches long and $\frac{3}{4}$ inch wide with a perforation near the base. Not being symmetric it may have been a knife. If of native copper the hole would be an anomaly, but the figure suggests a recent article and Mr Nelson's note called it sheet metal.

Fig. 56 is of the same class, the flanges contracting more than usual in the outline sent by the owner, Mr W. T. Fenton of Conewango Valley N. Y. In a note on this article Mr Fenton said: "I have lived in this valley over 50 years but have seen but one copper arrowhead. Of that I send you outline of actual size. It was found in the town of Poland, Chautauqua co. Mr Larkin claims to have found some copper ornaments in a mound he opened a great many years ago, but if I remember right he sent them to the Smithsonian institution."

In his *Ancient man in America* Dr Larkin often speaks of native copper articles, without mentioning their final resting place. In a letter to the writer he says he thought he sent them to the Smithsonian institution or the Peabody museum. Nothing could be learned of them there and it is to be regretted that all have disappeared. His published statements may be quoted without comment, omitting minor matters:

> In the year 1859 while exploring some tumuli in the vicinity of the Red House valley we found numerous singular and interesting relics, among which were spearheads 6 inches in length with double barbs composed of masses of native copper; also several blocks of mica which were in about the same condition as when chiseled from the granite of the Alleghany mountains. It was near this valley where was found one of the most interesting relics ever discovered among the works of the ancient inhabitants. It was a flat piece of copper, 6 inches in length by 4 in width, artistically wrought, with the form of an elephant represented in harness engraved upon it, and a sort of breast collar, with tugs on either side, which extended past the hips. The great amount of copper implements and blocks of mica that have been found, contradicts the theory of Mr Squire, that the tumuli located in western New York are not the work of the mound builders. I am satisfied, beyond a doubt, that

the Indian races never mined for mica or copper, neither did they bury either of these articles with the remains of their distinguished dead.—*Larkin*, p. 19

The circumstance of the Conewango and the Red House valleys being on and near the different routes to the southern rivers may be the cause of the lavish distribution of copper in those sections.—*Larkin*, p. 20

He gave an account of the demolition of a large tumulus in the town of Cold Spring about 1820, as told him by the old Seneca chief, Gov. Blacksnake:

Great quantities of relics, such as gorgets, flint axes, arrowheads, and a great number of copper implements artistically wrought from masses of native copper which was brought from the mines of Lake Superior, were found with the bones. . . So rich was this mound with decaying skeletons and relics of curious workmanship, that *new*, after more than 60 years have passed away, fragments of human bones, arrowheads and copper relics are found in large quantities at each successive plowing. In the spring of 1879, a few days after the ground had been plowed, in company with two boys we found 15 arrowheads, a curious piece of copper, and nearly a peck of fragments of human bones.—*Larkin*, p. 23

In speaking of Oil creek he said: " In the year 1861 I saw tools found in different places on the creek which were composed of native copper, one of which weighed several pounds. It was something like a drill, rather flat, pointed at one end and appeared to have been hardened."—*Larkin*, p. 81

Dr Larkin believed that the American elephant was tamed and used by prehistoric races. " Finding the form of an elephant engraved upon a copper relic some 6 inches long and 4 wide, in a mound on the Red House creek, in the year 1854 and represented in harness with a sort of breast collar with tugs reaching past the hips, first led me to adopt that theory."—*Larkin*, pref. The first quotation might imply that he had not seen this; the other that he himself found it. Those acquainted with native copper will at once conclude that some ingenious imposition was practised on him; one of those which every antiquarian sometimes encounters.

Fig. 47 is not so well finished as some of this type and the socket is square at the base. It is in the Bigelow collection and was found on lot 42, Lysander, west of the village of Phoenix and Oswego river. The socket is short and the flanges rather low.

Fig. 48 is in the same collection, but came from near the Bay of Quinte, on the north shore of Lake Ontario. The finder unfortunately had ground down all irregularities. It is flat on one side, ridged on the other, with a square base. The flanges are parallel and much contracted and the socket is depressed, meeting the blade at a right angle.

Fig. 67 is a long and rather rude spear of this type, in the Kellogg collection at Plattsburg N. Y. where it was found. The socket is short and nearly as wide as the blade, with parallel incurved flanges. This kind of socket was used at a later day.

Fig. 66 is in the Kellogg collection, and was found at Clintonville in Clinton county. The general form is good but it seems unfinished. What should be the point has a broad protuberance and we might expect the removal of this in a perfect article. The shank is narrow and well worked, but is rounded at the end.

Fig. 51 is from the Martin collection in Plattsburg and was found about 2 miles northeast of that place on a sandy ridge at the head of Cumberland bay. Mr Martin's account follows: "The ridge referred to is wooded and was originally a long tongue of land between the bay and a river known as 'the creek,' whose course was artificially changed some 50 years ago. This implement shows lamination at the base. It is somewhat weathered and is green on most of the surface. A cross section is a square, except for about an inch from the point, where it is round." He called it a borer or awl and it may be compared with Mr Frey's shorter awl in fig. 17. This is very large beside that, being 7½ inches long. It is a rare form in New York and the finest yet reported. The writer is much indebted to Mr Kellogg and Mr Martin for figures of their fine articles.

After describing the foregoing the writer obtained a few other illustrations from various parts of New York. For some of these he is indebted to Mr C. C. Willoughby, assistant curator of the Peabody museum, Cambridge Mass. Fig. 171 is a native copper ax or broad gouge from Avon N. Y. given to that museum by Dr William Nisbert. This form seems more common in the Genesee valley and that of the Susquehanna than elsewhere. The general form is that of the ax, but the edge is slightly hollowed, as will be seen in one of the sections. Fig. 177 shows a piece of native copper given by Dr Nisbert and coming from the same place. It has been hammered into a rude celtlike form but has not been finished. Its importance is in this lack of completion, showing that some native copper articles may have been made here. Very few of such fragments have been found.

Fig. 173 is from an article entitled "The mound-builders," by W. L. Stone, in the September number of the *Magazine of American history*, 1878, p. 532. It is of a spearhead found in 1876, near the outlet of Saratoga lake and north of Moon's Lake house, by J. W. Coit. Fig. 174 is from the same article and is a figure of a similar but larger spearhead. This was found the same year by Horace Kelly, 2 miles up the lake on the Ramsdill farm. The point has been broken off. Both these slender spearheads have pointed tangs and are typical specimens.

In the same article Mr Kelly is credited with finding another fine spearhead at Ramsdill's cove on Saratoga lake. No description or figure of this is given but Mr Stone said it was tinged with red, apparently vermilion. If this were the case the article would be modern. Another curious find by the same person was a skull, colored on each side by verdigris. From this Mr Stone inferred the use of copper earrings. His article has some interesting statements and curious conclusions. Considering its sparse population the region about Saratoga and Lake Champlain has been unusually prolific in native copper articles. It is probable they were brought directly from Lake Superior, through the Georgian bay and Ottawa river to the St Lawrence, and thence into Lake Champlain. This was an early and well known route.

Fig. 172 is a fine and broad spearhead of native copper from a drawing by Mr Van Epps, made Aug. 1, 1901. It was found in Saratoga county many years ago and now belongs to William T. Becker of Schenectady. In this specimen the broad tang is quite short and by itself would have afforded a slight hold to the shaft.

This made necessary a notch on each side near the base. The reverse is flat and the ridged side is shown, with the usual green corrosion and hammered streaks so commonly found. He described these as a "threadlike veining of the copper, with a smooth, polished surface, though with a rich patina. In fact, this side of the blade is a vivid green of beautiful tint. The other side is smooth, unpitted, and blotched yellow and green." These are frequent features of these implements.

Two small axes or celts of native copper the writer found in the fine cabinet of the Athens historical society, Pennsylvania. Fig. 175 is one of these, belonging to Dr C. H. Ott of Sayre Pa. but found at Owego N. Y., like the next. It is symmetric and well wrought. A longitudinal section is given. Fig. 176 is another of these, more irregular and like an ax. It belongs to Mr Percy L. Lang of Waverly N. Y. Both are fine and in good condition. The writer learned of no other articles of native copper near the Susquehanna and Chemung rivers, the general range being farther north. Others will probably be found but to no great extent.

Mr Van Epps sent also a figure of a fragment of a native copper ax, "found on the ridge near Edmonds house on the Vlaie," in 1875. This is in the town of Broadalbin. It now belongs to Mr E. B. Markham, Northampton N. Y. The curved cutting edge remains, 2¼ inches wide, and the fragment is a little more than that in length. He also kindly furnished a statement of native copper articles found in eastern New York but not including Lake Champlain. He commenced his descriptions in February 1894, bringing them down to November 1901, and they embrace 10 celts or axes, nine lance-shaped blades, nearly all with tangs, and an interesting find of 135 beads. His account follows:

A brief description of the celts shows four found in the town of Glenville, Schenectady co. alone. Three were apparently surface finds; the fourth was from a grave opened by a steam shovel in a gravel bank, midway between Hoffmans Ferry and Schenectady. This was described in the *American antiquarian*, March 1894, p. 110. Some years later the interesting lot of native copper beads described below was obtained from another grave in the same bank.

One celt is recorded from the vicinity of Sharon Springs, Otsego co., one from Stuyvesant, Columbia co., the latter being in the collections of the New York state museum at Albany; and two others, found quite near the latter, in the town of Schodack. These two were found about the year 1893. Another, found near Glens Falls, is listed as lot no. 203 in the catalogue of the Wagman collection, sold in Boston by Woodward, in 1886. This measured 2½ by 4½ inches.

The tenth and last to be mentioned was found on a relic strewn sand spit, jutting northward into the great Sacandaga Vlaie near Northampton, "the Fish-house," Fulton co. This is a broken portion of the usual form of native copper celt, a fragment forming a triangle, whose sides measure about 2 inches, one being the cutting edge of the implement. The fracture, which is ancient, appears to have been made with great violence, for the fragment remaining is bent, showing the effect of a torsional twist or strain. This interesting relic was found in 1874 or 1875 and is covered with a fine green patina. All of the 10, as far as can be ascertained, are of the common rectanglar form, varying but little from the dimensions of the one from Glens Falls.

The lance-shaped blades, whether used as knives, spear or arrowheads, present a greater diversity of form. Of the nine blades listed five are from Saratoga county. The remaining four are from Warren county, two of which were found near Glens Falls, one from French mountain, Queensbury, and the last from the vicinity of Lake George. Modern territorial boundaries count for nothing in archeologic science unless based on some prominent natural division of land by mountain range or water, and so it will be seen by those familiar with these localities that the whole of the blades recorded were found in a very small area.

One of those from Saratoga county is a most beautiful example of the ancient American's skill in working native copper. It is now in the collection of William T. Becker of Schenectady N. Y. It is in absolutely perfect condition, is beautifully patinated in different tints, and has the unusual feature of a deeply notched base in addition to the usual tang, which however is very short. Its length is 4¼ inches and greatest breadth 1⅜ inches. Two others of the blades listed, of the common variety with long tang, were described and figured by William L. Stone in the *American magazine of history* for September 1878. One is described by him as being bronze but this is doubtless an erroneous idea.

Closing the list of objects made by the aborigines from native copper is the find of beads numbering 135. This was made about midway between Hoffmans Ferry and Schenectady, at a gravel ridge in the town of Glenville, ½ mile from the north bank of the Mohawk river. In opening this bank several graves have been disclosed. The one containing the beads had no other relics save a few crumbling fragments of bone, while the grave containing the copper celt, but a few yards distant, yielded quite a store of fine objects, among which were an ornamented slate tube, some awls and a hook of bone, several hundred small perforated sea-shells, and a very fine doubly perforated boat-stone, made of cave alabaster. The 135 beads, varying from ¼ to ½ of an inch in diameter, were made by coiling a pounded strip of native copper upon itself, and then by further dextrous beating bringing the lapped edge down to an almost perfect weld. Unfortunately for science this interesting find was scattered instead of being preserved intact.

On reviewing this list an interesting question is suggested. The indicated localities show that all described, with the exception of the celt from Sharon, are from the Hudson valley from Stuyvesant north to Lake George, and from the lower waters of the Sacandaga and Mohawk rivers. In fact every specimen listed, with possibly two exceptions, comes within the bounds of the ancient territory of the Mahikans or River Indians. Can we thus conclude that these were made and used by these Indians? Certainly, to my knowledge no native copper implements have been reported from any part of the Mohawk valley west of the localities mentioned. All of the numerous private collections of local material in the Mohawk valley, from Amsterdam to Utica, are absolutely barren of relics of this character. Triangular and conical arrowheads, rolled tubular beads, trinkets, etc. made from sheet copper and brass of colonial times, are quite abundant on castle and village sites on either bank of the Mohawk west from Amsterdam, but never an object of native copper has appeared. Garoga, Otsquago and Cayadutta, the three great Mohawk strongholds of precolonial time, with their myriad relics unearthed, tell us the same story—an utter absence of native copper.

In qualifying the above suggestive statement it may be said that the Palatine Bridge awl and beads are presumably of native copper, and that nowhere are native copper articles more frequent than in Clinton county near Lake Champlain. They seem everywhere to have been lost in travel and they are rare in the Mohawk valley because that was not a favorite route till the Mohawks came there late in the 16th century. Even then the river was little used west of Canajoharie for a long time.

Several of the articles mentioned by Mr Van Epps are illustrated in this bulletin, and can be compared with his account.

His ability and experience are well known, and these have been of great service in the present work.

Among the articles of native copper not figured here is one formerly in the state museum, from H. Van Rensselaer's farm near Ogdensburg. It is classed as a copper pickax. A fine triangular copper celt also belongs to the museum which came from Stuyvesant, Columbia co. One article of native copper was found on D. F. Shafer's farm, Schoharie. Mr Henry Woodworth of East Watertown has a fine spear of this material 4 inches long. A neighbor found a larger one which he unwisely polished. Mr W. P. Letchworth of Portage says: "I once had in my collection an ancient copper hatchet, excavated near Silver Creek N. Y. which disappeared in a loan exhibition held in Buffalo many years ago."

Copper implements have been reported at East Aurora, but most relics are recent there and these may be inferred to be the same. At the opening of the Cambria ossuary in 1823 copper and iron implements were found with flint arrowheads and pottery. Though of an early date the copper there was probably not native.

The Wagman collection was sold at auction in 1886. It was made up of articles found not far from Saratoga and in it were three of native copper. One was described as a combined spearhead and bodkin, probably a spear with a long and sharp tang. This was from Glens Falls and measured 6½ inches by ⅞ inch. An arrowhead from the same place was 4½ by 2½ inches, which is unusually wide for such an article. An elliptic and pointed spearhead was 6 by 1¼ inches. In the *Smithsonian report* for 1879, Mr N. Cole mentioned a native copper spear, found near West mountain, Warren co.

Copper articles were found in opening a mound in Mount Morris in 1835. These have since been reported as of brass, including brass kettles. Mr Hough mentioned a native copper chisel in Ellisburg, Jefferson co. Mr T. A. Cheney said, in describing a circular work and its relics on the east bank of the Allegany river:

Among these were spearheads some 6 inches in length with double barbs upon each side and formed from native masses of copper. . . Fig. 9 represents a copper arrowhead of fine finish which was disclosed within the inclosure. It is stated that spearheads, hatchets, etc. of iron, much oxidized by exposure, had been observed within this ancient work. None came to my notice.—*Cheney*, p. 49

The arrowhead represented is large but otherwise like those of European copper found on Iroquois sites of the 17th century. It is possible that native copper articles were found with this but Mr Cheney did not say he saw them. Others have reported modern copper arrows from forts on Cattaraugus creek, not found by them and therefore subject to doubt. They may have been used by the Eries in the 17th century.

Besides 135 tempered copper beads found in a grave 5 miles northwest of Schenectady, Mr Van Epps reported a native copper ax in the *American antiquarian* for 1894, found 20 years earlier. Fragmentary copper occurs in a few places. Most of the native copper implements now known in New York have been gathered within a quarter of a century and there may be many unreported now in private hands. Mr J. W. Nelson reported a fragment of native copper, 3 by 5 inches, with silver veins, from Deming's point, mouth of Matteawan creek, and a double-pointed knife 4 inches long. Copper spears have been doubtfully reported from Fredonia.

In the summer of 1901 Mr Lorimer Ogden, of Penn Yan, obtained a fine copper spear, 6 inches long, but no further description of this has been received, nor any notes of locality. The find is quite unusual for that section of New York, as such articles seem very rare in the lake region of the central and western parts of the state.

A fine celt of native copper was received too late for illustration, and is now in the Bigelow collection. It presents no unusual features, but has the black lines, corrosion and verdigris common to all articles of the kind. The general thickness is $\frac{3}{8}$ of an inch, gradually sloping on one side to the top, but more abruptly curving on both sides to the broad cutting edge.

One lateral edge is straight; the other curves, so that the width, which is $\frac{7}{8}$ of an inch at the top, becomes an inch at the center and $1\frac{1}{2}$ inches at the chisel edge. This edge is angularly curved, and quite sharp. Like most of the Bigelow articles it comes from the vicinity of the present owner's home, having been recently found near Three River Point, at the junction of the Seneca, Oneida and Oswego rivers. That part of New York has proved peculiarly rich in native copper, perhaps from its navigable waters and fine fishing grounds.

Among Canadian articles not yet found in New York is a native copper spike, found with two others and some copper beads on Wolfe island. It is pointed, slightly curved, angular, and has the head bent over so as to form an eye. This is $\frac{1}{4}$ inch in diameter and $3\frac{3}{8}$ inches long.

Another is a very slender one-sided spear or knife, with a tang, above which it has its greatest width of a little over an inch, tapering thence to the point. The other edge is 14 inches long. This came from St Joseph's island.

The most remarkable is a broad, thin, and much curved copper knife, the concave edge of which has 15 equidistant rounded teeth. It is a little over 13 inches long and nearly 3 wide. Part of the wrapper of beaver skin still adheres to it. This came from Midland City, the site of an old Huron town, giving it an age of at least 260 years.

In Wisconsin native copper articles much like the rolled arrowpoints of New York have been found, but they are heavier and the edges do not meet. The copper fishhooks there differ but little in appearance from the recent Iroquois forms. The copper crescents of that state are broad and curved plates, with sharp projections at each end of the concave edge. A similar ornament or implement in the national museum tapers regularly from near the center to each end and has no projections. It was found in Maryland and measures $8\frac{1}{4}$ inches from point to point. Another in the same museum came from Canada. This is wider, more curved, and is 8 inches across. A very slender tool in the same collection is also from Canada. It is $11\frac{3}{8}$ inches long and the greatest width is at the base, where it is ½ inch wide, tapering thence nearly to the point. Flanges extend halfway on each side.

Recent copper and brass implements

The New York aborigines were not slow to see the advantages of metallic articles of all kinds, whatever they may have had before Hudson's voyage. His account of their copper tobacco pipes may be compared with incidents in Gosnold's voyage a little before, along the New England coast. It is by no means improbable that some European articles had already found their way to them, but opportunities at once became greater. The Dutch soon followed Hudson's lead to the upper waters of the river, and early trade may be said to have commenced there rather than in the harbor of New York. We may dismiss the mythic Tawasentha council as far as the Iroquois are concerned. Their eastern boundary reached only the west line of Albany county, and the hostile Mahikans held the west bank of the river till Van Rensselaer purchased the land on both sides. It is quite likely the Mohawks soon contrived to trade on or near the river, but they had no treaty with the Dutch when Corlaer (Arent Van Curler) visited them in 1642, nor is there any evidence of any till 1645. Adriaen Van der Donck said: "In the year 1645 we were employed with the officers and rulers of the colony of Rensselaerwyck in negotiating a treaty of peace with the Maquas, who were and still are the strongest and fiercest Indian nation of the country; whereat the Director general William Kieft on the one part, and the chiefs of the Indian nations of the neighboring country on the other part, attended." The Mahikans had then removed to New England.

Preliminary to this first formal council with the Mohawks, Corlaer said in 1642, he "brought presents there, and asked that we should live as good neighbors, and that they should do no harm to either the colonists or their cattle, to all of which the savages at the three castles gratefully agreed." Three years later the treaty was made. The Mohawks of the first castle may have referred to Corlaer's informal visit when they said, Sep. 24, 1659: "Brothers, 16 years have now passed since we made the first treaty of friendship and brotherhood between you and all the Dutch, whom we then joined together with an iron chain. Since that time it has never been broken either by us or by our brothers and we have no fear that it will be broken by either side."

It would be easy to bring other proof that this supposed early Tawasentha council with the Iroquois was never held, but the practical fact remains that Indian trade began at Fort Orange or Albany, and that it speedily penetrated farther. The Minquas, or Susquehannas, lived on the lower waters of the Susquehanna river and were kindred to the Iroquois. They were visited by Capt. Cornelis Hendricksen, who made a report of his discoveries, Aug. 18, 1616. Among other things, "he also traded for, and bought from the inhabitants, the Minquaes, three persons, being people belonging to this company; which three persons were employed in the service of the Mohawks and Machicans; giving for them kettles, beads and merchandise." It has been reasonably supposed that these Dutch traders among the Mohawks were taken prisoners by their enemies, the Minquas, and that on their knowledge of the country the maps of 1614 and 1616 were partially founded. Farther we know not.

War between the Mahikans and Mohawks interfered with the Albany trade at times and in these hostilities the Dutch became involved in 1625. The commander at Fort Orange assisted the Mahikans, but the Mohawks beat the combined party and killed him and six of his men, cooking and eating one of them and sending portions to their villages to show they were superior to the white men. Yet the Mohawks bore no malice. Peter Barentsen visited them a few days later and they said they would not have injured the Dutch had they not meddled with them. After this hostile episode there was no farther trouble.

The Dutch did not at once sell guns to the Iroquois and were shrewd enough to withhold them from the River Indians when furnishing the others, but whether they sold arrowheads to both may be a question. The arrowheads found with other things in an Indian grave at Fall River, on which Longfellow founded his well known ballad, are precisely like those found on most recent Iroquois sites. These are generally a long triangle with various other features. For convenience those of iron will be placed with them here. Most of these are cut from thin sheet iron or brass, commonly with perforations by which they were securely bound to the shafts. Parts of these often remain, having been preserved by the salts of the copper. As shreds and large fragments of sheet copper are frequent on Iroquois sites it is probable that many arrowheads and ornaments were made on the spot. Sometimes an old brass kettle was used in this way.

Fig. 46 is a long spearhead from Cattaraugus creek, made from an old brass kettle. At the base the edges are rolled over so as to form a socket. This is the largest the writer has seen.

Fig. 6 comes from Cayuga county and is reduced in size. It is made of sheet copper and is 1⅝ inches long. There is a perforation by which a part of the shaft remains attached by sinews. Fig. 70 is an unusually long and rather rough copper arrowhead from Indian hill, Pompey. This was the town of 1654, and these triangular arrowheads have been frequent there. It was occupied till 1682. This is unperforated. Mr David Boyle calls these ghost arrows.

Fig. 82 is in the collection of Mr W. L. Hildburgh and was found in Oneida county near Oneida lake. It is of rolled copper, pentagonal, with one perforation and another begun. This form is rare. Fig. 83 is similar but longer in proportion and has a very small perforation midway. It is in the same collection, and from Livingston county. Fig. 84 is in the same cabinet, and has a stem, rather a rare feature in this class. This is from Oneida county.

Fig. 63 is a triangular arrowhead with indented and undulating base. It is not perforated and comes from Indian Castle, north of Watervale, where copper arrowheads have been abundant. This was occupied in 1677. Fig. 103 is a long and perforated triangular arrowhead, also from Pompey. Fig. 111 is of a different character, being of yellow sheet brass, stemmed and barbed and with notches in the edges. This is from the fort south of Pompey Center, occupied about 1640.

Fig. 117 is from Cayuga county and was found in 1888. It has no perforation but part of the shaft remains attached, being bound below the metal. Mr W. W. Adams, the finder, called it a brass arrowhead.

Fig. 113 is of copper and from the Sheldon fort, lot 69, Pompey, probably occupied about 1630. It differs from most in having the two long edges slightly convex. Fig. 129 is one of three triangular arrowheads found by the writer at Indian hill, Pompey, in 1886. This is perforated but the others are not. Fig. 133 is of rarer material, being of thin iron. It is triangular, with indented base, and having one of the long edges irregular. This came from Indian Castle, Pompey. Fig. 134 is from the same place and is of copper. The perforation is central and long, and the ends of the base have a slight upward curve. Fig. 140 is a long triangular brass arrowhead from the fort south of Pompey Center, having convex edges. Most of the articles from this site are in the Vail collection.

Fig. 141 is a brass arrowhead from an Oneida village site near Munnsville, Madison co. It has a sharp angular indentation in the base and another in one lateral edge. Fig. 142 is another of sheet brass, found in 1879 east of the Oswego river at Phoenix. It is barbed and stemmed.

Fig. 143 was drawn from one taken from a grave near Amsterdam N. Y. and in the possession of Mr Le Grand S. Strong. It has an indented base and a square perforation. This is unusual though not unique. Mr Grider gave the same feature to two others. Fig. 144 is one of these, from the same place, and differs from the last in its pentagonal form. Fig. 159 is the third of these, and is much larger than the others.

Fig. 157 is a large and fine brass arrowhead, stemmed and barbed. It is from Stone Arabia and is in the Richmond collection. Fig. 160 is a copper arrow with angularly indented base, and is in the same cabinet. It was from the Nellis farm near Palatine Church, and with it is a larger one with slightly indented base. Fig. 164 is a triangular brass arrowhead from the Sheldon fort, Pompey. This is not large, and the base is convex. Fig. 58 is from the same site and like the last.

Fig. 149 is another triangular arrowhead from Indian hill, Pompey. It has a central perforation and an indented base. Fig. 150 is from the same site and is similar except in having a straight base. Fig. 152 is a large triangular arrowhead, one edge of which is convex. The perforation is central. It is from Happy hollow, west of Canajoharie. Fig. 153 is a narrow triangular arrowhead from Indian hill, Pompey. The base is slightly convex.

Fig. 86 is a very neat little brass arrowhead, found near Oneida lake, and of unusual form. There are slight notches in the lateral edges of the sloping base and the cutting edges are a little convex.

Fig. 151 is of quite a different type. There is a short stem with an expanded base, and the shoulders are almost barbs. The lateral edges are beveled and sharp and there are several long incisions on the flat surface. The point is broadly rounded, and it may be one of the later steel arrowheads. It is in the collection of the Onondaga historical association, but without locality. Fig. 54 has a similar base, is of iron or steel, and not unlike the last in general character. It is beveled from the center and there is a large perforation on each side above the shoulders. The edges of these have been hammered down. It was found at Baldwinsville in 1880 and is in the Hamill collection. Fig. 184 is a fine and curious iron arrowhead, with notches. It is in the Coats collection and from the Onaghee site.

There is another class of recent copper arrowheads barely separated from ornaments. A triangular and rather long piece of sheet copper was rolled into a slender cone. If it was to be used as a bangle, with a tuft of colored hair inserted, the narrow point was left a little open for suspension. If an arrowhead was desired, it was rolled tightly so as to make a sharp point. Fig. 85 shows one of the latter, in the Hildburgh collection, which has part of the slender shaft remaining. It was found in Livingston county, where the form is frequent. Fig. 148 is another, belonging to G. W. Chapin of Fonda N. Y. and was found on Briggs creek, north of the Mohawk river. The writer has seen many on the Pompey, Owego and Cayuga sites, and they abound in Ontario county. Fig. 183 is a fine example, recently found at Indian hill in Pompey.

In these selections from a great number of specimens and figures, it will be seen that the Iroquois changed the material but not the form of the arrowhead. Probably nine out of 10 are simply long triangles, the favorite Iroquois form when they used stone. The rolled and cylindric examples do not differ much in form from the earlier ones made of horn. Those with stems are everywhere rare, and some were not made by the Indians, but sold to them or given as presents. Most persons are familiar with the iron arrowheads used by our western tribes but they are hardly a new feature of savage life. Some Abenakis came from New England to visit Count Frontenac in 1691 and proffer him their aid. In reply he told them they might have all the iron arrowheads they could carry away. This shows he had a constant and abundant supply.

Brass kettles

The earthen pot survived the coming of the brass kettle for a generation, for poor Indians could make the former when unable to buy the latter. The advantages of the metallic vessel were too great, however, to be foregone except in case of need. It was light, durable and convenient, and was at once a favorite. Even to the happy hunting grounds its spirit could go with the Indian warrior. Hence came a curious custom among the Hurons of Canada, always in early days noted as thieves. The articles were valuable and the graves might be robbed. The safeguard was to cut a hole in the bottom with an axe, which ruined it for earthly use but not for spiritual. Nearly all Canadian vessels of that period are thus marred.

It was not so in New York. Fragments of vessels are found, but an incredible number of perfect ones have been exhumed, many of which afterward did faithful service in the kitchens of pioneers. In graves they often contain traces of food, charred corn, dried grapes, chestnuts, raspberry seeds and other things.

Large vessels might be used in villages, but travelers preferred those which were small and light. For convenience these were sometimes placed in caches or hid in trees. Thus, when Cammerhoff and Zeisberger were at Skaneateles July 21, 1750, they said: "There we found the kettle which we had concealed when we passed here the last time."

The lack of this kettle, while at Onondaga, gave them occasion to note another use. A war party was about to set forth and on the evening of July 11 they were invited to a farewell feast:

> The repast was held in the house of the chief and all was conducted in a very ceremonious manner. Every one brought his kettle. The chiefs sat together and our seats were in the midst. After the usual ceremonies the meal was served by two servants. They had boiled a whole pig with Indian corn and the servants continued helping the guests until the supply was exhausted. As we had no kettle or dish, they furnished us with a kettle and filled it very full. We were still hungry from our long fast and ate the food with great relish. When we had emptied our kettle they filled it again and we took it home with us.—*Cammerhoff*

At the 10 days dead feast and other like occasions, the Onondagas still carry home parts of the feast in their tin pails, but they do not now eat from them. In old times it was customary for all to carry their bark dishes and wooden spoons. When Conrad Weiser and John Bartram were at Onondaga in 1743 the latter gives the impression that the feast was more in common. He said: "After 4 o'clock we all dined together upon four great kettles of *Indian* corn soop, which we soon emptied." A few days before Weiser was at a feast with 18 Onondaga chiefs. Several songs opened this, followed by the emptying of a two gallon keg of rum in mutual healths. "After that the kettle was handed round with a wooden spoon in it; every one took so much as he pleased." This may have been placed in his own small kettle.

In 1684 La Salle wanted 2000 pounds of small brass kettles at Fort Frontenac, costing 1 livre, 5 sous, a pound. These would sell for 4 francs a pound, yielding a great profit. The English and Dutch sold these also but included them among presents. In 1693 Gov. Fletcher gave the Mohawks 24 brass kettles for cooking to replace those the French had destroyed in February. Some of 2 or 3 pounds weight were among the presents of the following year. They prized small brass kettles but large ones were needed for public occasions. When Schuyler and Livingston came to Onondaga in 1700 the Indians, "according to their custom, hung over a great kettle of hasty pudding made of parch'd Indian meal, and sent it us." The great kettle is now of iron but is still a feature of New York reservation life.

As one feature of public gatherings and great occasions the kettle became symbolic. When Frontenac was preparing to invade Onondaga in 1696, he spoke to his friendly Indians about "the Great Kettle from which the whole world will take what it wants to keep alive the war unto the end. Be not impatient; that Kettle has not yet boiled; it will boil soon. Then will Onontio invite all his children to the feast and they will find wherewithal to fill them. The tears and the submissions of the Iroquois will no longer be received as in times past. They have overflowed the measure; the patience of the common father is exhausted; their destruction is inevitable."—*O'Callaghan*, 9:645

Dablon described the general war feast at Onondaga in chapter 10 of the *Relation* of 1656, and part of this is quoted here:

> We saw in the latter part of January the ceremony which takes place every winter in their preparations for war, and which serves to stimulate their courage for the approaching conflict. First of all the war kettle, as they call it, is hung over the fire as early as the preceding autumn, in order that each of the allies may have the opportunity to throw in some precious morsel to be kept cooking through the winter; that is to say, in order that they may contribute to the enterprise which they are planning. The kettle having boiled steadily to the

month of February, a great number of the hunters of Sonnontouan (Seneca) and of Oiogoen, (Cayuga) having repaired hither, made the war feast, which lasted several nights. . . The Father (Chaumonot) was invited to put something into the kettle to make it better. He told them that that was certainly his desire; and accommodating himself to their customs, he assured them that the French would put some powder under this kettle, which pleased them greatly.

To upset this kettle was to abandon warlike plans. To boil the flesh of an enemy in it was often metaphoric, but much more frequently literal. William L. Stone quotes from Ramsay's *History of the revolution* a passage apparently referring to Guy Johnson's council with the Indians at Oswego in 1775:

Colonel Johnson had repeated conferences with the Indians and endeavoured to influence them to take up the hatchet, but they steadily refused. In order to gain this cooperation, he invited them to feast on a Bostonian and to drink his blood. This, in the Indian style, meant no more than to partake of a roasted ox and a pipe of wine at a public entertainment, which was given on design to influence them to cooperate with the British troops. The colonial patriots affected to understand it in its literal sense.—*Stone*, 1:88

It may be noted that Was-to-heh-no is still the Onondaga name for the people of the United States, being the nearest approach they could make to pronouncing "Bostonian" a century ago. The figurative use of many terms has been often explained but the early Iroquois had a well founded reputation for cannibal tastes. The eastern Indians called them Man-eaters.

Though the subject of cooking and serving meals is connected with that of the utensils employed, a bare reference may serve here. Not much time was wasted in preparing food till those later days when the kettle was always over the fire. Some ate directly from this; others used small kettles, bark dishes and wooden spoons. Indians had their changing and local fashions even as we do. Their few vegetables and abundant game gave them all the variety they required. Greatly prized were the three supporters of life, corn, beans and squashes, and of these they have pretty stories to tell. In agriculture the colonists learned some useful lessons from them, and the French missionaries preferred meal ground with the wooden pestle and mortar to that from their own hand mills. In plentiful times they reveled; in times of dearth they ate anything they could. In Indian corn they left a priceless legacy to the land.

A few illustrations of brass kettles will be given, as well as of some parts. They were serviceable after their original use was gone, being formed into arrowheads, knives, saws and ornaments of many kinds. Examples of some of these secondary uses will be given.

Fig. 158 is a much reduced figure of one out of many kettles found in Cayuga county in 1885-86. Fig. 155 is another of actual size, in the collection of Mr C. F. Moseley, Bergen N. Y. It is from Honeoye Falls, where many similar ones have been found. Fig. 147 is another from the same place, of actual size. The ears are of different forms. This one is in the Dann collection, is not corroded, and is in fine condition. Another, much like this, is from the same place, and now in the state museum. It is 5¾ inches in diameter, and almost 3 inches deep. One with it is an inch wider and a very little deeper. One found 3 feet underground, at the junction of Wood and Fish creeks, near Oneida lake, has a top diameter of 5½ inches, bottom 4⅛ and a depth of 3 inches. This was much corroded. The rim was rolled but not wired, and the ears for the bail were cut out and riveted in place. It was close to the face of a skeleton and bottom side up. Other relics were found several feet deeper, but the shifting sand made the original depth doubtful.

Brass tobacco boxes were among the presents of 1694, and these are occasionally found. They are circular and flat and were sometimes used to hold paint. Tomahawks are frequently made of brass, with a steel edge.

While most of a broken brass kettle could be used, the ears were not available, and so are sometimes found in a perfect condition but detached from the vessel. Fig. 128 shows one of these which forms a thick loop, with the ends riveted to the vessel. This is from Indian hill, Pompey, where this form is common, and is of actual size. Fig. 156 is also of actual size, the rivets remaining. It is made of a flat plate of brass about as thick as the kettle, inside of which it was placed. The corners of the plate are bent over. This is from the fort south of Pompey Center, making it 15 or 20 years older than the last.

Copper spoons are rather rare, the Indians preferring the wooden ones which they made with so much taste and skill. Fig. 137 was drawn by Mr R. A. Grider from a large copper spoon belonging to Mr D. I. Devoe of Fort Plain N. Y. It was made from part of a kettle, and was found in a grave. Fig. 138 is a profile view of another made of pewter, and fig. 139 is a full view of the same. The form is much like that of the wooden spoon but lacks the ornament at the top of the handle, which is bent over. This was found in a grave in Cayuga county with a pewter mug containing 44 French coins, dated from 1642 to 1656. Some of the earlier dates may be doubtful.

Fig. 131 is a flat copper spatula, found on the Odell farm, lot 3, Van Buren, on the south side of Seneca river. It has been hammered into shape, and is rather smooth. This may have been once nearly on a plane but is now considerably bent. Fig. 163 is much like the last in outline but has a longer handle, thickened at the end. It is of iron and was found in the town of Fleming in 1887.

Among the presents recommended for the Five Nations in 1694, were "50. Brass Kettles of two, three, & four pound a p^{ce} thin beaten and light to Carry when they go a hunting, or to war if the Continue."—*O'Callaghan* 4:126. The high value the Indians placed on "small brass kettles" was noted in 1696. Among the presents of that year were 30 small and 14 large kettles.

For trade purposes they were often brought to the Indians in graded sizes. Mr J. V. H. Clark mentioned some thus arranged in Pompey. "Mr David Hinsdale found a *nest* of brass kettles, the largest of which would hold two pails full, and the smallest about three pints. They were all bailed, ready for use, and some of the smaller ones were used in Dr Western's family and Mr Hinsdale's family for several years. The larger ones, being on the outside, were considerably corroded by time and exposure and were unfit for use."—*Clark*, 2:260

Squier mentioned a curious burial around a kettle, which may be credited to the Neutral nation. A large number of skeletons were found together in the town of Black Rock. "They were arranged in a circle, with their heads radiating from a large copper kettle which had been placed in the center and filled with bones. Various implements both of modern and remote date had been placed beside the skeletons."—*Squier*, p. 100

The brass kettles which he describes and figures from the Canadian ossuaries are quite different in some respects from those of New York. The ears and bails project far out from the sides in a very clumsy way and the kettles held from 6 to 16 gallons. As these were undoubtedly French, those of New York may show the prevalent English and Dutch forms in the 17th century.

Metallic pipes

Roger Williams's statement has been given regarding the quickness with which the New England Indians learned to cast metals, even in the form of pipes. Their ability to cast brass may be doubted. When the writer was a child every hunter cast his own bullets, and he has done the same. Bullet molds occur on Iroquois sites 250 years old. Like things were a part of household economy. In the general Bigelow collection is a mold for casting pewter spoons, much in use in pioneer days by those who could not afford silver, then a foreign commodity. Were the old spoons bent and battered? They went into the ladle and mold and came forth in pristine beauty.

Though Hudson said he saw copper pipes in New York in 1609, none of these are known, nor are metallic pipes common. Those found on Indian sites were probably made by white men. Pewter and lead were easily melted; not so iron and brass. So bars of lead were often given to the Indians at treaties and are sometimes found on their village sites. These were mostly used for bullets, but some were formed into rude ornaments, to be noted later. In case of necessity the lead ornament or pipe might take the form of balls for the gun.

Fig. 79 is the bowl of a pewter pipe in the Hildburgh collection, found in Livingston county. The bowl is cylindric and it has a broad and thin rim. Another as broad again, with a wood and copper bowl, is in the same collection, but is almost destroyed. This is from Oneida Valley, whence comes another of the same materials and in fair condition. This has an expanding bowl with raised angles.

Fig. 80 is a slender trumpet-form pipe of brass in the Richmond collection, found on the Briggs farm, town of Mohawk N. Y. Fig. 104 is a large and rude iron pipebowl from the Rose hill farm in Seneca county, on the east bank of Seneca lake. It has a projecting rim and is angular.

Fig. 127 is a curious angular lead pipe in the state museum, with a bold platform projection in front of the top of the bowl. This was obtained by Mr J. S. Twining in Jefferson county. Fig. 130 is a massive pipe of pewter or lead and of simple form, found in the town of Schroeppel, a little north of Oneida river. The edge of the bowl has been battered. Fig. 145 is a fine but short lead pipe, found near the surface of the grave in Fleming where the pewter mug was obtained. Fig. 146 is an equally fine pipe of the same material, found in Rome N. Y. The stem is quite slender.

Fig. 132 is an iron pipe of modern pattern, found in the town of Scipioville. It is partly brazed, and but 5 inches of the long stem remain. Fig. 136 is a fine pewter pipe, found near Mapleton, on the site of Upper Cayuga. Part only of the stem is shown here, but the extreme length of the pipe is 9½ inches.

Fig. 182 is from Oneida Valley and is in the Hildburgh collection. The owner describes it as made of copper, pewter and wood. The form is unique. Fig. 181 is a fine example of a small iron pipe, found in Jefferson county and belonging to Dr Getman. It is well made and preserved, and has a knob at the bottom of the bowl and the end of the stem. The stem is but little longer than the bowl.

Fig. 180 is a reproduction of one sent the writer by Walter C. Wyman of Chicago, and represents an interesting relic of two prominent men of New York. It is of silver with the simple inscription on the bowl: "Presented by Governor Tompkins to Skenandoah." De Witt Clinton visited the old chief at Oneida in 1810 and said: "He is entirely blind but his hair is not gray. He smokes, and can converse a little in English. He was highly delighted with a silver pipe that was given him by Governor Tompkins." The latter filled his office from 1807 to 1817, and the pipe is now nearly a century old. Mr Wyman said: "The lettering is very much rubbed but is legible. The pipe was obtained with the wampum belt of the Oneida treaties, directly from old Skenandoah, the chief of the Oneidas in Wisconsin, who died three years ago. He was the grandson of the owner of the pipe and was about 90 when he died."

Mr Jeptha R. Simms describes another of these New York silver pipes in the following words:

> Oct. 28, 1867, I had a visit from Rev. Robert Jones Roberts, a young English missionary to the Six Nation Indians at Newport, province of Ontario, Canada. He was accompanied by G. H. M. Johnson—On-wan-on-shy-son—one of the principal Indian chiefs of that province, who claimed to obtain his name by descent from Sir William Johnson. . . He carried with him a pipe which had descended through several generations of sachems, and had become among them an evidence to its bearer of his dignified position. On the plate under its stem, next the bowl, was engraved the history of its origin, reading upon the right side, from the mouth, "As a testimony of their sincere esteem;" and on its reverse, "To the Mohawk Indians, from the Nine Partners of the tract near Schoharie, granted in 1769." This pipe is of pure silver and weighs four ounces avoirdupois. It is of goodly proportions, with a bowl 2 inches deep; from which the stem measures 18½ inches. An ornamental plate, perhaps an inch wide, extends 5 inches from the bowl, bearing the inscription above named. From this plate to within 4 inches of the end of the stem, is a small silver chain. On the front of the bowl stand the figures of a white man and an Indian, holding a chain in their right hands; the latter having in his left hand a pipe from which he is smoking. This relic is sacredly treasured among the Indians.—*Simms*, p. 43

Mr Simms gave a good figure of this interesting article. The Schoharie valley belonged to the Mohawks, and the original Nine Partners' great and little patents were in Dutchess county, and dated in 1697 and 1706. These partners were not the same. Several patents of Otsego and Schoharie lands were made in 1769.

After the above was written the writer figured a fine pewter pipe belonging to Mr Addison Pease of Fleming, and found at that place. It is of a modern form, with ample bowl and in good condition.

More of these might be shown, but they differ little in form, even when combined with wood or stone. Such combinations were frequent. In a paper in the *American antiquarian* for 1879 Mr Edwin A. Barber figured several Dutch and Swiss iron pipes and a rude copper pipe from Pennsylvania. He also quoted a statement about the pipe of Capt. Miles Standish, used by him till his death. It was "a little iron affair of about the size and shape of a common clay pipe." Mr Barber thought this was made in Holland. Those in New York may be over 200 years old. This eminent authority concludes "that we have no positive proof that pipes were in use in Europe before the Columbian discovery of America; but if it can be shown that such was undoubtedly the case, it is reasonably certain that such objects were employed in medicinal remedies or for purposes of fumigation."

It was customary to present large quantities of pipes at Indian councils. Among the presents in 1696 were "1 grose of tobacco pipes, wood & tinn," and sometimes casks of pipes were given. The study of European pipes used by the Indians of New York has proved of much interest. They came in at quite an early day.

Trade axes

One of the earliest iron implements that found its way into the interior of New York is known as the trade ax. It usually has a broad edge for cutting, but is narrow below the socket for the handle. This was made by bending over the upper part of the flat iron plate, forming an elliptic opening. They are of all sizes, and quite frequently are stamped with three circles, each inclosing a cross. Sometimes the cross has a second bar. The circles vary from one to three, never exceeding the latter number. Many are unstamped. They occur in large numbers in some parts of Canada and New York. Hundreds have been found on Cazenovia creek in Erie county. Large numbers on Cattaraugus creek, near the lake, kept the early blacksmiths supplied with good material, and Mr Obed Edson recorded large finds in Erie and Chautauqua counties. Several hundred pounds of these were found on M. B. Crooks's farm, 2 miles from East Aurora. Miles Bristol paid for two years tillage of his orchard lot with the axes he found at the village of Lima. In another place enough of these were obtained to equip an early sawmill, and Cayuga, Madison, Onondaga and Ontario counties have been equally prolific. After a century's gathering the crop is not exhausted. Squier said of these: "Thousands are found in the western counties of the state."

Their early introduction has been already noted, Champlain seeing them here in 1609. One or two have been found near the prehistoric fort in the town of Minden, but not of late years at least within the wall. Squier said that brass kettles and European articles were found inside the bank, but this is usually thought an error. In another place the evidence is clearer, and fig. 87 is probably one of the oldest to which a date can be given. It is 7 inches long and is stamped with two circles of unusual character. The cross is not of the common type, and there are very small circles in three angles of the limbs. This is in a collection at Cazenovia N. Y. with another much larger, and regarding both Mr J. T. E. Burr writes: "The iron axes are from the fort on the Nichols farm, on the Mile Strip in Fenner. I know when they were found, and assure you they are genuine and properly located." The larger one is 8 inches long, with a cutting edge of 1½ inches. It has three circles close together but each cross has a double bar. The socket is bent and broken.

It is probable these were used in the siege of the Oneida fort in 1615 but whether they were brought by Champlain's Indians or already owned by the Oneidas is conjectural. The latter removed their town soon after, and when Corlaer visited them in December 1634, a chief told him that "the Frenchmen had come thither to trade with six men, and had given him good gifts, because they had been trading in this river with six men in the month of August of this year. We saw very good axes to cut the underwood." They saw razors also.

In this case it is quite probable that by the river they meant the St Lawrence, rather than any stream in the country of the Oneidas. It was easy to misunderstand.

In the pictures accompanying the account of the nine Iroquois tribes or clans in 1666, the Turtle and the Beaver carry the typical trade ax, but the Eagle has a hatchet expanding equally on each side. Wooden clubs were at first called tomahawks, but after a time axes were known by this name. Taking up and laying down the hatchet became terms for war and peace, modified to suit the occasion. According to Colden the expression was enforced by acts at times. He relates the proceedings at a council in Albany in 1684. Speeches and explanations had been made to avert hostilities. "Then the axes were buried in the southeast end of the courtyard, and the Indians threw the earth upon them." The council was really held in 1681.

When war was unsuccessful the Indians said the ax was poor or broken, and some battles have been known by this name. Axes were figured on or attached to war belts. In 1692 Tataconicere, an Oneida at a French mission post in Canada, learned that the wife of the Onondaga chief, Black Kettle, was trying to escape. He at once killed her, and "struck his hatchet into the gate as a sign that he would not grant pardon to any one." Old documents and speeches are full of these symbolic uses.

In his camp at Onondaga lake, July 2, 1756, Sir William Johnson made a remarkable speech of this kind to the Indians assembled there. He had advised them to return the French hatchet and had sharpened their own by a belt. To this they had made a suitable response and waited his further pleasure. He said:

> Brethren—two days ago you returned me thanks for sharpening your own Hatchet and said you had found mine last year at Oswego was not good. I told you then that I had some weapons

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with me that were sharp likewise if properly made use of and I hope you will make use of them vigorously and our common enemy As your Hatchet is now sharp. I likewise sharpen your knife to cut our enemys throats or take their scalps off, and as I know it is an old custom amongst you to feast on your enemies flesh I present you those Kettles for that purpose. [This is meant figuratively, and some Meat is boiled in the Kettles, which they eat and call it French Mens Flesh, so when drink is given it is called blood of their enemies.]—*O'Callaghan*, 7:149

There was much profit in selling these implements. La Salle gave an account of trade at Fort Frontenac in 1684, with general demands, cost and profit. He wanted 1000 axes, which would cost 7 or 8 sous a pound and would sell for 30 sous apiece. They were prized as presents and Schuyler gave the Iroquois 300 hatchets in 1708. Metallic implements made blacksmiths necessary to the Indians and it became a matter of political importance whether the blacksmith was English or French. Old anvils have been found on village sites, the possession of which was matter for stratagem or debate two centuries ago. A few words on this may be of interest.

As the Iroquois increased their use of guns, axes and kettles, they more and more required the aid of smiths. The Mohawks could go to the white settlements, but this was too long a journey for the others. So, at a council in Albany in 1691, they renewed a previous request, saying: "We did formerly desire that we might have a Smith at Onnondage, whereupon a young Man that was a Smith by Trade, was sent us, and we gave him 20 Beavers for his encouragement to stay, but is gone away; again we request that we may have a Smith to mend our Arms, it being somewhat dangerous to come downe for every trifle hither, & we desire also that the Smiths here may in the meantime work as cheape as they did formerly."—*O'Callaghan*, 3:775

On behalf of all in 1692, Oheda, an Oneida chief, said, "We desire the blacksmith's Anvill that is at Onondage may remain there, and that there may be a Smith permitted to goe and live there for the mending of our arms, and not to goe away againe so soon as they have Traded, as the other Smith did."—*O'Callaghan*, 3:844

This may have produced but little effect, and, Feb. 25, 1693, the Onondaga speaker said to Gov. Fletcher: "Wee desire that yo^r Excellency would be pleased to ord^r a Smith to bee with us in o^r country to repair our armes that wee may defend ourselves against the French." Fletcher replied: "I doe grant yo^r request of a Smith, and will order one to live in yo^r country to repair yo^r armes."—*O'Callaghan*, 4:23

He was not so swift as his Indian name implied and they renewed their request July 4, 1693, with an addition. "Wee begge of you to lett us have a Smith & a gunn stock maker in our Castle to mend our armes when they are broaken."—*O'Callaghan*, 4:43.

In 1700 the French offered to furnish smiths to mend their axes and guns. Some years later this led to a conflict of interests in the Iroquois capital, concerning which Father Jacques d'Heu wrote from Onondaga, May 24, 1708:

> The English blacksmith has returned after nine months absence. On his arrival those of the French party were not willing to give him the anvil which belongs to them, and concealed it at my house and requested that a smith be sent from Montreal. That matter, I told them, would be discussed on M. de Joncaire's arrival. It seems to me that it would be very important for the good of religion and the French Colony, were there a French blacksmith here; the Englishman would then decamp. But this Blacksmith should be under the Black Gown and an exemplary man. One Donné would be our man, but I see no prospect of him. The anvil was given to the English blacksmith, because those of the English party were beginning to mutiny. But I'm told that if a Blacksmith came from Montreal he would get at once the anvil and all the tools belonging to those of the French party.—*O'Callaghan*, 9:816

There were afterward French smiths among the Senecas, but they did not remain long. It became a part of the New York policy to see that a reasonable number of its own blacksmiths were provided. Seldom have they been of such political importance.

In 1742 it cost £21 7½d to set up the bellows, anvil and vise at Cayuga, of which New York bore the cost. So it was proposed to the colonies of New York, Massachusetts and Connecticut, in

October 1747, "that a gunsmith be sent to each of the tribes following, viz: The Oneidas, Onondagas, Cayugas and Senecas, and two men with each gunsmith, to continue until next spring, and that goods valued at £360, New York currency, be sent with them."

In the laws of the colony of New York mention is frequently made of these blacksmiths. By order Cornelius Van Slyck jr and company resided in the Seneca country, Sep. 1, 1741, to Sep. 1, 1742, mending arms, etc. to prevent French plotting. About the same time Peter Lansing and Barent Staats jr were four months in the Cayuga country on the same business. In 1745 Garrit H. Veeder, the Cayuga blacksmith, was paid £60, with something for sundries. Ryer Booen went to Onondaga with goods, two men and a gunsmith, and was there from November 1747 to May 1748.

Hendrick Herkemer, gunsmith at Onondaga, with two helpers and materials, was paid £70 for services from October 1748 to May 1749. The Seneca blacksmith had the same. It was customary to spend about six months in this service. Others are mentioned but it will suffice to speak of William Printup, blacksmith at Onondaga in 1750. He was a favorite there for some years and his name is still borne at that place.

This matter receives special attention here because it has been customary to speak of the anvils and blacksmith's tools which have been found as French. Few or none of them were. The Onondaga anvil, which Father d'Heu said belonged to the French party, the Onondagas asked permission of the English to retain but a few years before. The latter had furnished it and a smith. In the Seneca country alone did French smiths work, as far as records go, and that but for a short time. It is probable one may have been with the French colony at Onondaga lake in 1756 but there is no clear proof of this.

The Iroquois were not willing their dependents should have equal advantages with them. In 1750 the Shawnees and Nanticokes wished a smith at Wyoming, as well as at Shamokin Pa. and sent their request by Cammerhoff and Zeisberger. The Onondagas positively refused this.

When we consider the great quantities of axes that the English and Dutch both sold and gave to the Iroquois, and the universal prevalence in early years of the form known as the French trade ax, we are led to believe that all were not French, but that this was the common European form two or three centuries ago, as it is in Germany yet. A large proportion, at least, seem to have been made at Utrecht. In any case most of the iron axes found on New York Indian sites passed through the hands of its colonists.

Fig. 8 is much reduced and has one unique feature. While having nearly the common outline, a sharp spike rises from the upper edge, 1¼ inches high, giving a height of 6½ inches to this corroded implement. It was found at Rome N. Y. and may be dated about the middle of the 18th century.

Fig. 99 is a large and typical trade ax from Pompey, unusually wide for its length. It has the frequent three crosses and is very heavy. The figure is much reduced, the implement being 8¼ inches long. This ax is in the Skaneateles library. Fig. 98 is a very large and peculiar ax, also much reduced, the actual length being 10¾ inches. The lateral edges of the blade are now parallel, but the posterior may have been cut or ground down. The three crosses give weight to this supposition. In its present condition it is unique. It is in the Cazenovia library and was found at Nelson Flats, Madison co. as well as the following two.

Fig. 167 is the reduced form of a typical trade ax, with one unique feature. The two circles each inclose eight lines radiating from the center, instead of the cross. It is 7¼ inches long with a blade nearly 4 inches wide. Fig. 168 is similar but larger, the extreme length being 8¼ inches and the greatest width 4 inches. The three circles on each side each inclose a double cross. Both these show one characteristic feature of these early axes, the angular indentation of the outline below the socket. Quite a number have been found in the town of Nelson.

Fig. 90 is a curious ax in the Bigelow collection, which was found at Jack Reef on the Seneca river. It shows signs of long use, and was evidently once longer, but its most singular feature is a large rectangular perforation through the lower part. The posterior portion inclosing the socket is like some modern forms. The iron is much corroded.

Fig. 116 is a reduced drawing of an iron ax belonging to the Johnstown historical society, and which was cast or forged in one piece. The slender iron handle was evidently intended to be inserted in one of wood. It is said to have been found 8 feet underground at Johnstown N. Y. and the general form is quite modern. The head is 3⅞ inches from top to bottom and the length through the handle is 9⅜ inches.

Fig. 89 is another of these solid forms, of what may be called a tomahawk pattern. It has a slender projection like the last, for insertion in a wooden handle, and a sharp spike once protruded in front. The upper part terminates in a long and curved point. It is quite thin, and was found at Fort Bull near Rome N. Y. The length was 10 inches and it now measures 8½ inches from the curved tip to the front angle of the cutting edge.

Fig. 102 is from the same place and of actual size. The cutting edge has been a little broken. This tomahawk is much like some of our present hatchets, but less angular. It is rather a frequent form. By degrees tomahawks took more slender, and even graceful shapes. Fig. 97 is a reduced representation of a very common kind. The maker's initials, J. G., are on both sides, and are shown in the drawing. Otherwise the surface is plain. This is owned by Wilson Johnson, on the Onondaga reservation and is 8½ inches long.

Fig. 101 is a slender tomahawk, as long above the handle as below. The upper part is much curved and sharply pointed. This is in the Bigelow collection and came from Jack Reef on the Seneca river. It is one of the most frequent forms and its extreme length is 8¼ inches.

Fig. 91 is a small iron tomahawk from Union Springs which approaches the pipe tomahawk form. Almost every variety of iron ax is represented there. Fig. 77 is a small iron hatchet from Fort Plain, and is quite unlike most others. It is in the Richmond collection.

Fig. 100 is a fine and slender steel tomahawk, with a pipe-bowl, which belongs to Mr George Slocum of East Onondaga. He had it from an old Indian who said it was used in the war of 1812.

Fig. 92 is from a half size drawing of a pipe tomahawk by Mr R. A. Grider. It is from the Bellinger farm, near Middleburg, Schoharie co. The handle is hollow and on it are 19 groups of three lines each which Mr Grider thought represented 19 scalps. They are quite as likely to have been purely ornamental.

Fig. 93 is a pipe tomahawk of unusual form, the handle of which is handsomely inlaid. The total length is 12¾ inches and the part represented is of actual size. It is said to have been given by an Indian woman to Mrs Thomas Dixon of Jamesville N. Y. about 1800.

Fig. 94 is a pewter tomahawk pipe found on Edward Black's farm, east of Onondaga lake and south of Liverpool N. Y. It has many moldings, and is slightly ornamented with dots. This would do very well for smoking and might have some slight value in war.

Fig. 95 is another tomahawk pipe from Stone Arabia, of the same material and neatly made. This is in the Richmond collection.

Fig. 88 is in the same cabinet, and came from Canada, but is no finer than many in New York. It is a brass pipe tomahawk, edged with steel and handsomely ornamented. Pipes of the same character may still be seen on the New York reservations, and many historical societies have good examples.

Fig. 96 is not so common and is much reduced here. It is a tomahawk pipe belonging to Cornelius Johnson of the Onondaga reservation. From the top of the bowl to the extreme point directly below is 10½ inches. Below the handle it has the form of a double-edged dagger, widest in the middle. The handle is adorned with brass nails and is finished with a brass knob in front.

Fig. 179 is a curious steel tomahawk in Mr William Lounsberry's collection at Tioga Center, but found on the north side of the river. The peculiarity is in a sharp projection at the top and toward the handle. About Owego and along the Susquehanna above that point, iron axes and tomahawks frequently occur. Mr A. F. Barrott has one from Owego of the general trade form, but angular above instead of rounded, which is probably of a later type. Dr A. D. Gould has a pipe tomahawk from Willow Point, and others have been found.

Among the many tomahawks to be seen at Owego and vicinity is one belonging to Mr T. B. Reddish, which came from Middleburg, Schoharie co., where there were Indian forts and villages in the 18th century. This has a broad cutting edge, the implement being narrow at the socket and terminating in the long curved point above. On the expanded surface of the socket are the figures 1711. It is the only one reported with a date, except one from Pompey, dated in 1715.

Another Owego ax resembles the trade form, but has a neat scroll pattern indented in the sides. It is probably more recent than the form would indicate, though many pipe tomahawks do little more than add the pipe to this early form. In some of these, at least, the pipe bowl is formed separately and fixed by a screw.

Knives

It is surprising to see what delicate and beautiful work our aborigines did with their simple implements of bone and stone, but they were not slow to see the advantages of metallic tools and gave an appropriate name to their makers. A simple steel knife had a value to them of which we can faintly conceive. Fancy a white boy in the country without a knife! What wonderful things captives have been able to accomplish with one. It is almost the foundation of all civilized skill.

One early practice is commonly associated in our minds with the knife in the savage life of this land. It is that of scalping the dead. Fairly understood it has a different character from what many suppose, being the simple attestation or record of the warrior's prowess. It was not cruel, for no man intended to scalp the living. It was not intended as a savage mutilation, but to secure proof of what had been actually done. It silenced the mere braggart, who had no scalps to show. Hideous as they seem to us, these were to the Indian what stars, crosses, and honorable medals are to the European soldier. Granting its savage features it was the plainest record in a savage state.

The white man changed this. The honorable distinction became a source of gain. A price was placed on scalps, and men and women were killed for money. Fame and distinction became of less value than mercenary returns, for the white man paid for scalps and beaver skins as kindred commodities. Of this the red man had not before thought.

The French paid scarcely $6 for men's scalps, but King Louis thought they must economize in this. In 1694 he wrote to Frontenac and Champigny, then in Canada, that "His Majesty desires that they conform themselves to the order he gave them last year, to cease paying the Christian Indians 10 silver écus for every Indian killed, 20 écus for each prisoner, and half these sums for women; this will be a further diminution of the estimate. This expense can not be afforded."—*O'Callaghan*, 9:573

The New York colonists acted independently and more liberally or else the general price had advanced in half a century. Under date of May 7, 1747, Col. Johnson wrote to Gov. Clinton: "We shall soon have abundance of prisoners and scalps, wherefore will require a great deal of money, which they expect will be ready here at their return. I have paid the first who came home £60 for the six scalps brought from Crown Point which I could not avoid, and when the rest come in I must do the same, for they look to none else for it & must have it, as they say, punctually paid according to promise."—*O'Callaghan*, 6:361

Many quotations might be made illustrating this subject. Whether bounties were paid by either side during the revolutionary war does not clearly appear, though it is probable. The noted account of scalps taken by the Senecas, published in 1782, was long believed but is now known to have been written by Dr Franklin for political purposes. It has yet a certain value as being a good description of how scalps were stretched, dried and painted.

One of the great medicines of the Iroquois is connected with a traditional scalping incident and a great Huron feast was founded on the same story. The owl and the wolf meet, and the coming of the Ontarraoura is predicted. This animal seems to be the panther, or mountain lion, and to him the resuscitation of the good hunter is ascribed. In the New York story the good hunter loses his life and scalp. After many trials a bird brings the scalp back, but it is so dry it will not fit. At last the eagle suggests softening it with the mountain dew which has collected between its shoulders. The scalp becomes pliable, is fitted to its place, and the good hunter lives again, to the great joy of bird and beast. In this the presence or absence of the scalp becomes synonymous with life and death.—*Beauchamp*

In general there is nothing to distinguish the scalping from the hunting knife, but nearly all are pointed. Some were supplied ready for use; in other cases the handling seems to have been left to the sons of the forest. They were sold or given as presents by Dutch, English and French, and were of many forms and sizes. Illustrations will be given of a few of these but from their thinness most have perished.

The Dutch so soon began a spirited Indian trade that the French could do little in New York, except among the Senecas. Knives were among the smaller articles which La Salle wanted at Fort Frontenac in 1684, but in 1708 M. de Longueuil reported that Schuyler had given the Iroquois 800 knives. At the siege of Detroit in 1712 the French Indians were given 190 butcher knives, to be used as bayonets. These may have been the long carving knives here shown.

Among the presents to the Iroquois at Albany July 3, 1693, were 87 hatchets and four gross of knives; and among those recommended the next year were "2. Grose of Knives black hafted sharpe points." They were an ordinary article of trade besides. Hence we may conclude that most of those found in New York were of Dutch or English make. During the period of the French missions here, French articles were quite freely used, but before and after the supply was small. This is not quite in accordance with prevalent opinion, but the proof is clear. West of Onondaga the French for awhile had a better chance. The question is one of interest but can be treated better in speaking of ornaments.

Fig. 106 was found in the town of Venice N. Y. in September 1887. It has a well preserved bone handle of European make and the total length is 8½ inches. All the illustrations on this plate are reduced. Fig. 107 is quite like the last, but the bone handle is differently ornamented. It is in fine condition and was found at Scipioville in 1886. It is a trifle longer than the last, the point having been less ground. Fig. 109 is from Fleming in the same county and has a horn handle, possibly of Indian make. The form differs from the last two, and it saw more use. The full length is 9 inches.

Fig. 110 is an iron knife in the Vail collection, found in the fort south of Pompey Center, with several others. This is a relic of the early Dutch trade, no distinctly French articles being found on this site. The handle is gone but the usual tang for hafting remains. The full length is 6¾ inches. Fig. 112 is from the same place, differing only in length, which is 9 inches.

Fig. 122 is a much corroded knife from Pompey, belonging to the writer. It is wider than usual. Fig. 105 was found at East Cayuga in 1888 and is more suggestive of a typical scalping knife than most others. The rude handle is of horn, probably made by the Indian owner. Fig. 118 is much reduced. This knife is said to have been used in war, and was given to Albert Cusick by another old Onondaga Indian. The blade is sharp, slender and curved, and the wooden handle well preserved. The full length is 15 inches.

Fig. 114 is almost unique, but there is another smaller one like it from an adjoining site. Both are from Fleming and were found in 1887. In this one but a small part of the iron blade remains. The handle is of brass and shows two Flemish lovers in an affectionate attitude.

Two very remarkable French knives are drawn from photographs furnished by Mr W. W. Henderson of Jamestown N. Y. In the illustrations they are much reduced from the full size. Under date of July 1, 1887, Mr Henderson wrote:

The knives were found in gravel, below the base of an artificial mound erected on a high ridge, through which a roadway had been cut, removing half the mound, and leaving the roadbed 10 feet below the base of mound, as first discovered by early settlers. In excavating for the roadway the knives and bones no doubt slid down from a point above in the body of the mound. The apex of the mound is at present 15 feet or more above the roadbed. It is thought De Celeron with his large company of French and Indians camped near this spot in 1749, and long previous to this date the natives of this locality no doubt had intercourse and traffic with the French in Canada. . . The above mentioned mound is near Jamestown and the knives were taken from it April 1887. They bear the words "Lempier—Rue St Honore—34. ☞ a Paris."

In a letter dated May 10, 1901, Mr Henderson corrected this statement:

Two steel French knives, 12 inches in length of blade, one 2 inches in width at the handle and the other 1½ inches, bearing the trademark "Sabatier, Rue St Honore, 84, A Paris," were found with a human skeleton in removing a large mound from highway near Fluvanna. They were doubtless obtained by the Senecas from the French in Canada by traffic or stealth, or were intrusively buried in this mound with some deceased French hunter.

Fig. 169 shows the narrowest of these knives, the trademark being on the opposite side. It is 1½ inches wide at the handle and 12 inches in length thence to the point. Fig. 170 is 2 inches wide at the handle with a blade 11 inches long. They are like the common carving knife and suggest the butcher knives to be used as bayonets.

Fig. 72 is a large, flat and angular knife, made from a brass kettle, and found near Beaver lake, Lysander. Grooves and notches have been filed near the base, for secure attachment to the handle. Iron knives were so abundant that a makeshift like this is rare.

Fig. 178 is a remarkable recent copper knife of moderate thickness, found by Mr Luke Fitch on Indian hill, Pompey. The form is that of a shoemaker's knife, and it has a tang for insertion. Iron knives are frequent there but this is the only copper one the writer has seen.

Miscellaneous

Prefatory to an account of a few miscellaneous metallic objects found on Indian sites, it may be well to mention some of those of all kinds on which duties were imposed in New York in 1686, and which were intended for Indian trade. Most of these have the word "Indian" prefixed.

They were Indian duffels, strouds, blankets, plain cottons, half thicks, white Olembriggs, kettles, hatchets, hoes, red lead, vermilion, cotton, red kerseys, knives, shirts, shot, woolen stockings, Indian haberdashery, drawing knives, looking-glasses, wooden combs, beads, tobacco in roll, belts, scissors, jew's-harps, Indian paints, drills, tobacco boxes, Tinsie lace, gimp lace, needles, tobacco tongs, powder horns, Indian heales (steels). In the law of 1692 white osend cloth takes the place of white Olembriggs, and in that of 1699 it reads white Ozenbrugs Mellish. Both have bells instead of belts, and this is probably correct. Guns with all their parts afterward appeared among treaty presents, adzes, shears and toys, powder and ball, bars of lead, gun flints, shoes with and without buckles, hats, fans, articles of shell, laced coats and hats, red coats, jackknives, garters, tomahawks in 1714, silver medals, added to a large trade in ornaments of silver and brass.

Peter Stuyvesant wrote to the duke of York on behalf of the Dutch inhabitants, in 1667, in regard to this trade:

> Since the Trade of Beaver, (the most desirable comodity for Europe) hath allwayes been purchased from the Indyans, by the Comodities brought from Holland as Camper, Duffles, Hatchetts, and other Iron worke made at Utrick &c much esteemed of by the Natives, It is to be fear'd that if those Comodities should fail them, the very Trade itself would fall, and that the ffrench of Canida, who are now incroach'd to be too neare Neighbours unto us (as but halfe a days journey from the Mohawkes) making use of their Necessities and supplying them, they will in time totally divert the Beaver Trade, and then the miserable consequences that will ensue, wee shall not have one shipp from Europe to trade with us.—*O'Callaghan*, 3:164

On this general question of use and supply the liberty is taken of quoting part of a letter from Mr S. L. Frey on recent articles found in the Mohawk valley. Some of it may be irrelevant, but no more appropriate place may be found for it:

In the modern sites there is found a great variety of traders' iron and copper work. I have some; principally iron axes, hoes, padlocks, jew's harps, thimbles, knives—some made from files, cold chisels, steels, etc. Copper kettles are found in graves, as well as ornaments of copper. I have but a few. Venetian beads are in great variety. Nails, buckles, and horse shoes are found; also hinges, gun locks and barrels. Every digger has some novelty. Most of the iron axes found here, marked with one, two and three crosses, were made at Utrecht for the Indian trade. The white clay pipes marked R. T., E. B., and others, are English, while some others are Dutch. They were given to the Indians by thousands. Grès de Flanders ware was brought in small quantities by the traders. I have one jug from a grave, and I know of one other with the arms of the city of Amsterdam on it. There is a curious white earthen vessel in the Richmond collection, from a grave, and I have heard of a few other pieces of earthenware. Bottles are singularly scarce. I know of one "apostle spoon." I never heard of a single steel trap being found. English gun flints are not uncommon. A rum bottle with W. J. impressed (said by the finder to mean William Johnson) came from the site of the Jogues shrine.

The writer again calls attention to the fact that the so called French axes were most of them made in the Netherlands. It is quite the fashion in the interior of New York to call any early European remains French and there are several nominal French forts where none ever stood. Articles of a religious character mostly came from that nation.

Steel traps were commonly used at a distance from the towns and were not likely to be lost at home. The writer has found but one small one on an Indian site. This may be recent, but seems antique. Bottles are rare and may have been little used. The Indian did not drink while hunting, but emptied the keg at village feasts. Cups were used then, and several silver ones have been found.

The above summary does not include everything furnished in the Indian trade, but no one who reads it will be surprised to find any article of the period on any Indian site later than the middle of the 17th century. It was a simple question of use, taste and ready supply. No durable article mentioned above has failed to appear in one place or another while the list might be much extended. The Indians used compasses for laying out geometric figures, and the writer has seen a hammer stone, with circles and an inscribed star, which was found in an Indian fireplace. Thimbles, locks and keys, bars of lead, buckles, sword hilts, large and small vises, pewter platters, spikes, trammel hooks, handsaws, anvils, cannon balls, horseshoes, hammers, files, hoes, steels for striking fire, are among the articles found. Mr J. V. H. Clark says of the northern part of Pompey: "Wagon loads of old iron have been taken from these grounds."

Fig. 108 is a fine and curious steel chisel from Pompey which was in the Ledyard collection. The edge is good and there are two long and deep grooves above this, one above the other, reaching about half way of the long and slender implement. The edges are chamfered near the base.

Fig. 76 may be called an iron chisel. It is quite broad for its length, which is 4½ inches including the broad tang. It was found in Fleming in 1887 and is much corroded.

Fig. 126 is a quadrangular steel celt, found on lot 53, southeast of Pompey Center. All other remains known to the writer there are prehistoric, but the fort of 1640 is about a mile west of where this was found. It is a fine and unusual article.

Fig. 124 is an iron awl from the fort just mentioned. It is corroded, but sharp and somewhat curved. Fig. 125, from the same place, is much like the last, but smaller. Some of the old Onondagas yet have similar ones in bone handles. Fig. 154 is from the same place, and is of the same general character. They are frequent there.

Fig. 81 is in the Hildburgh collection and came from Ontario county. It is long, flat and sharp, and might be called an awl, but Mr Hildburgh considers it a brass arrow or spear head. In either case it is an unusual form.

Fig. 161 is a slender, flat and curved copper awl from Indian hill, Pompey, where many have been found. It has the appearance of being cast.

Fig. 123 is an iron spike found by Seneca river, in Lysander. It is cylindric, long and slender, with a narrow base, and is not a rare form.

Fig. 64 is a long iron spear, greatly reduced in the illustration, the full length being 8½ inches. This was found in the town of Oakfield, and belongs to C. F. Moseley, of Bergen N. Y. The triangular base has a triangular perforation, and the other end forms a spearhead, occupying two fifths of the entire length.

Fig. 119 is a spearhead at the end of a very long shank. It is of iron and was found 2 miles west of Canajoharie. Fig. 121 has the same general form but the shank is but about half the length of the last. This was found at Indian Castle north of Watervale. The form is frequent and widespread.

Fig. 115 is an iron spearhead, much like a double bladed knife or dagger. It is leaf-shaped and has a tang. This is from the fort south of Pompey Center, where several have been found. It seems much rarer elsewhere. Fig. 120 is much like the last, but the blade is less than half the entire length. It was found in 1885 at Cross lake.

Fig. 185 is a cylindric piece of copper, hammered down to a broad edge at one end. This is from Indian hill, Pompey.

Fig. 69 is an old steel for striking fire with flint and tinder, which belongs to William Isaacs of the Onondaga reservation. This was the national emblem of the Mohawks and rude drawings of it may sometimes be seen attached to old treaties. The Mohawks probably got the flint and steel soon after coming to New York, if not while still in Canada. Their own name referred to this as far back as it can be traced, and they came in contact with the whites first of all the Iroquois. The early Norsemen used the same form of steel. Many forms occur.

Fragments of brass kettles were utilized for tools and ornaments. Fig. 18 shows such a fragment notched for a saw. Fig. 135 is a much larger piece, one edge of which is merely regularly cleft with a knife for the same purpose. It was found by the writer on the recent site near Wagner's hollow, in Montgomery county.

Fig. 165 is a slender copper fishhook from the recent site known as Upper Cayuga, on lot 114, Ledyard. There were many of these there and at Scipioville. Fig. 166 is a large iron fishhook from Scipioville, where several were found. This one has the line still wound around the shank, where it was preserved by iron rust.

Fig. 162 is a pewter mug from a grave at East Cayuga site, lot 95, Fleming. In the mug were 44 French coins, dated from 1642 to 1656, and mostly having two holes for suspension. All were of copper, about the size of our half cents but thinner. This mug was found by and still belongs to Mr John Perkins.

Fig. 15 is a bullet as it came from the mold, found at Indian Castle, north of Watervale. Musket balls often occur in good condition, ready for use but unfinished. The writer has figured bullet molds from the same place.

Two immense iron hoes were found at Fort Bull near Rome N. Y. One of them was 7¾ inches broad by 7 inches deep with an ample socket for the wooden handle. On the Cattaraugus reservation may still be seen similar great hoes which the Senecas say were presents from Washington.

Tobacco boxes were commonly changed into paint boxes and receptacles for ornaments. One of these, filled with trinkets, was found in a grave 2½ miles west of Fort Plain. They often occur in graves, placed there when it was the fashion to inter articles with the dead. This one was nearly 3 inches across.

Mr W. W. Adams took out of one Cayuga grave the following articles, May 2, 1888: One brass kettle, 17 flints, two gunflints, six bullets, six long shell beads, a bone harpoon, three buckhorn handles, a knife with buckhorn handle, 21 gaming flints, three bars of lead, five rubbing stones, 16 bears tusks, two axes, two pairs of shears, four pairs of bullet molds, two gunlocks with flints, 47 pieces of gunlocks, 32 knives and cutting implements, two large iron shears, a gun 4 feet 8 inches long, a pipe, a piece of black paint, a piece of mica, two trigger guards, one wormer, a gun cleaner, steel and two flints, a quantity of powder in a cloth bag, two melting ladles and 2500 wampum beads. There were also some Jesuit bronze rings.

Though this is a great quantity from one grave, attesting the dignity or wealth of the inmate, some others probably exceeded this in value when silver ornaments lavishly adorned the dead. Nothing was too good if they were really loved. The above list is curious in showing the contemporaneous use of many things.

In describing the foregoing articles the writer has not forgotten that only those of native copper can be strictly called aboriginal, but the later ones illustrated or mentioned were used by men still in their savage state, and in their own wild way. They were features of Indian life here for two centuries, and to understand that life we must know something of what was in daily use. It has been deemed sufficient to merely mention many things. Guns and all that appertain to them have been omitted. Jew's-harps needed no illustration, unless of a plumed and painted warrior playing on one. Thus many things are omitted in the figures given as being well known in a general way, while prominence has been given to others of prehistoric age. Nearly half the figures are of native copper articles and references are made to very many more. By far the larger part of these have been found east of Cayuga lake, and north of the southern watershed of the Mohawk valley. West of the Genesee river and in the southeast part of the state few have been reported. This may be the result of several causes now left without discussion.

The subject of metallic ornaments is left for another paper, though incidental reference has been made to them in this. They were very few in this state in prehistoric times, for readier and more showy materials were found. Copper implements were more in demand, for their toughness and durability recommended them, even when stone could be more easily wrought. They reveal trade and travel, and a skill of no mean order in working with primitive tools.

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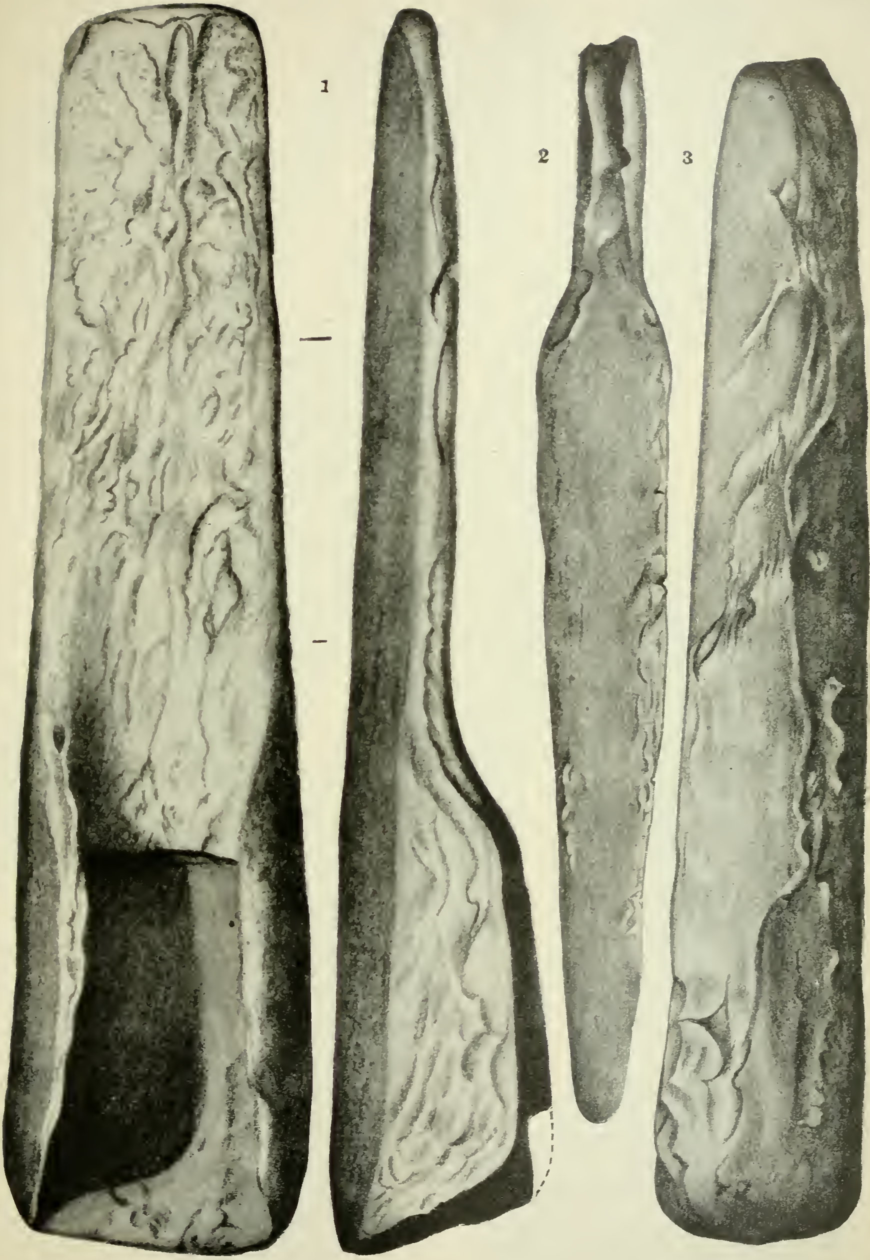

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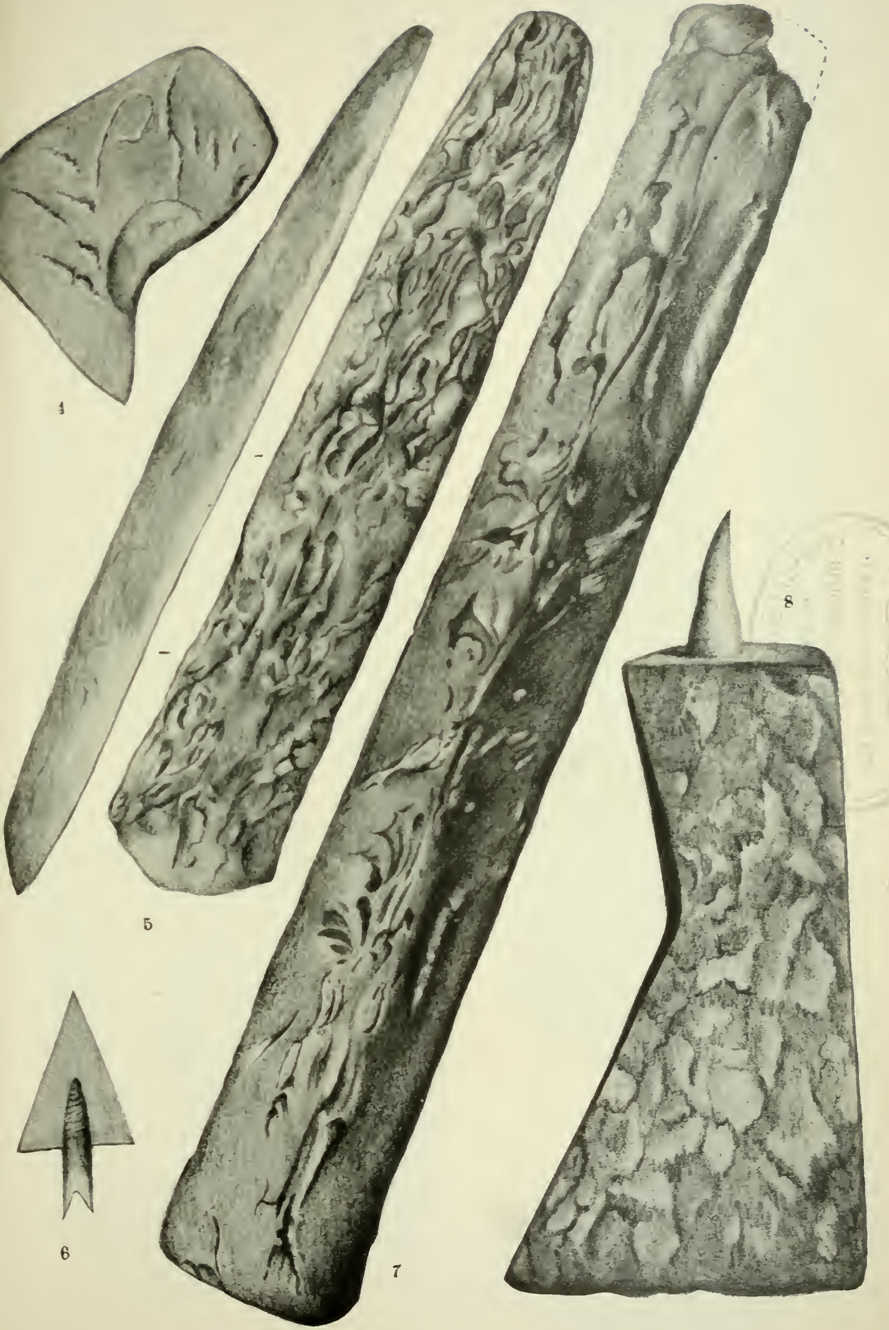

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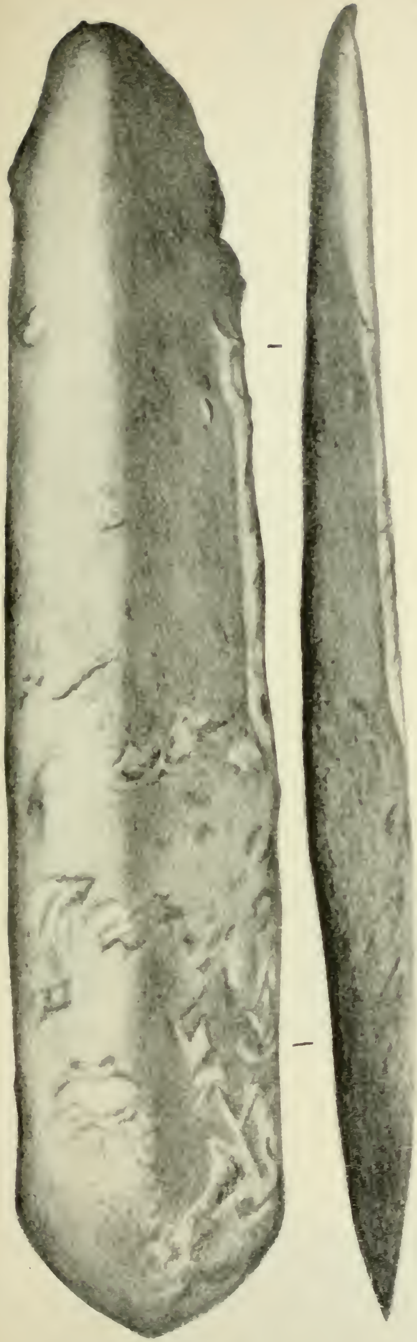

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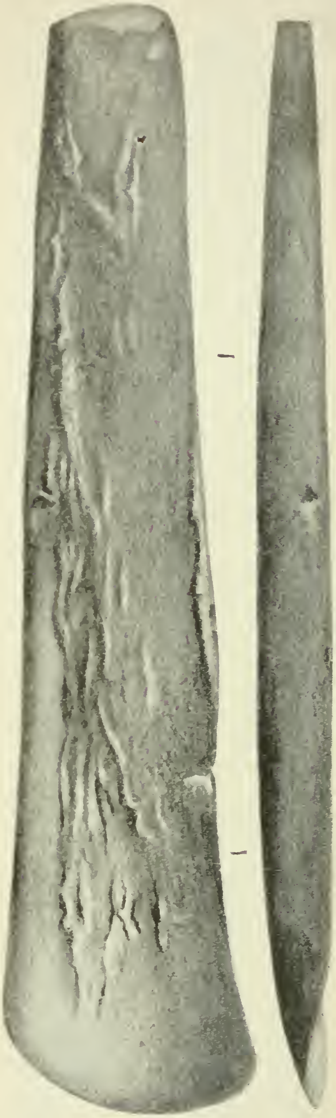

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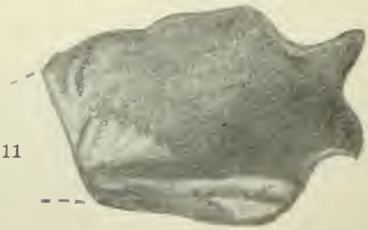

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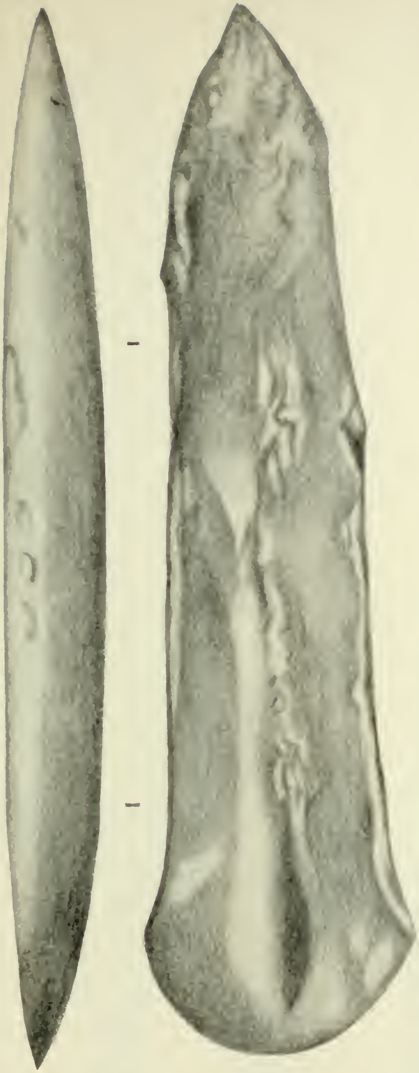

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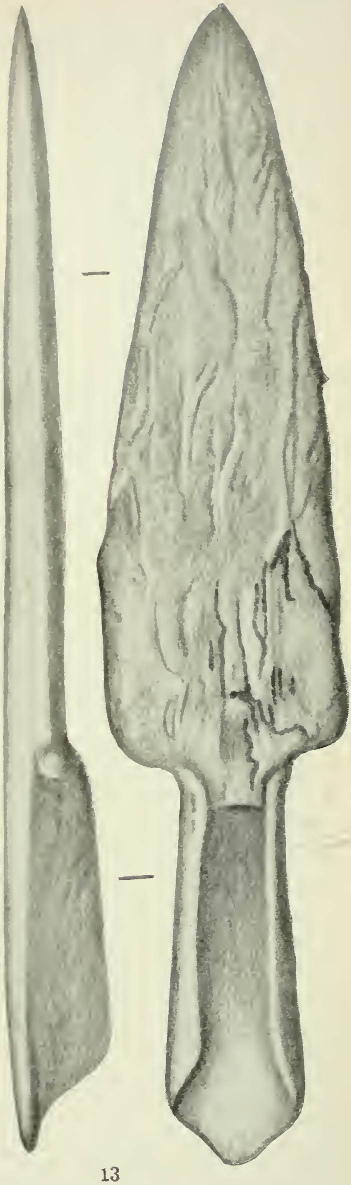

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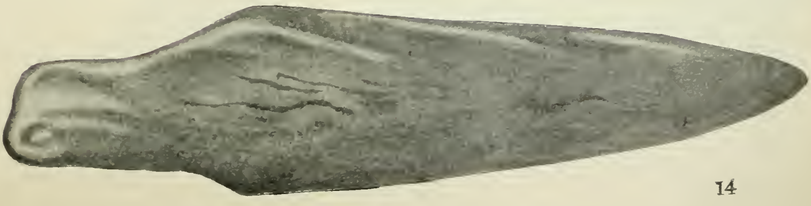

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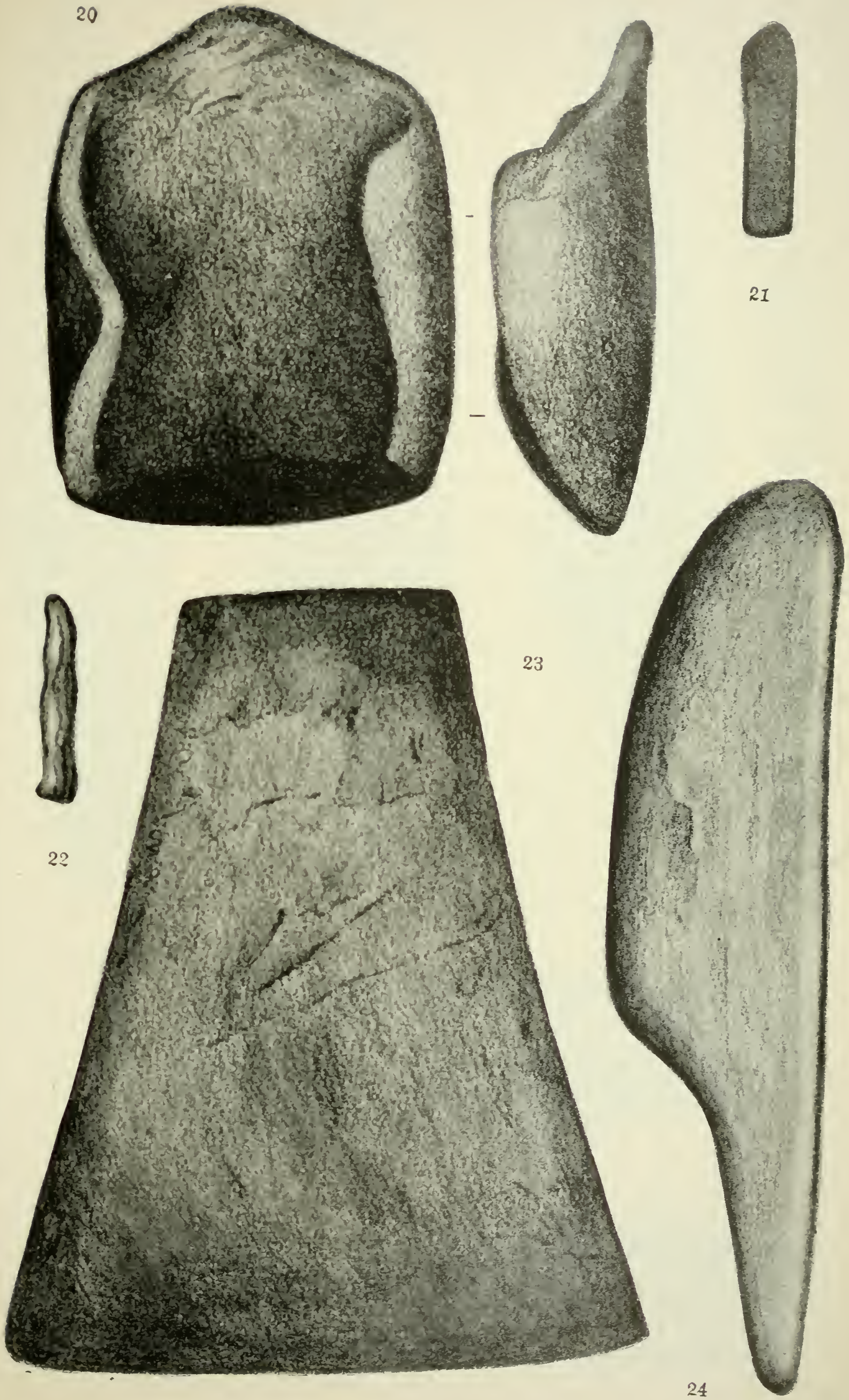

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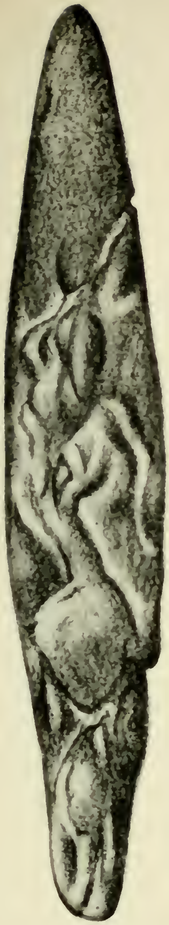

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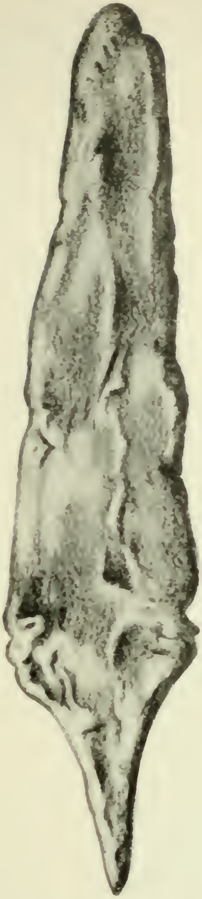

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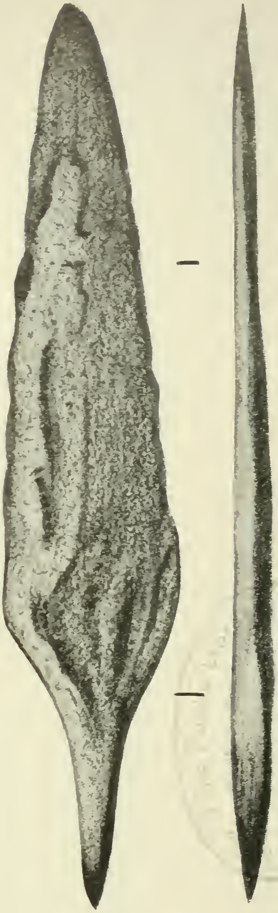

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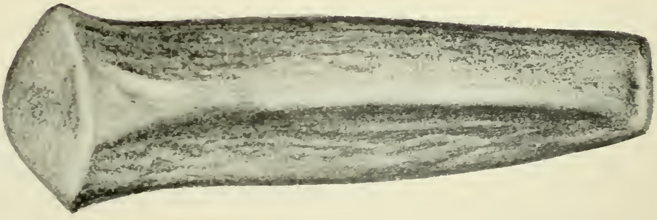

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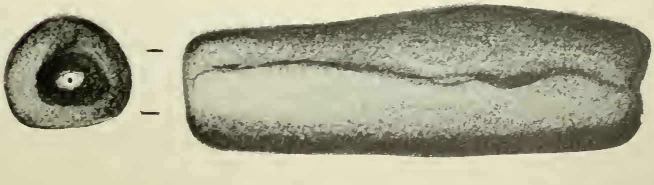

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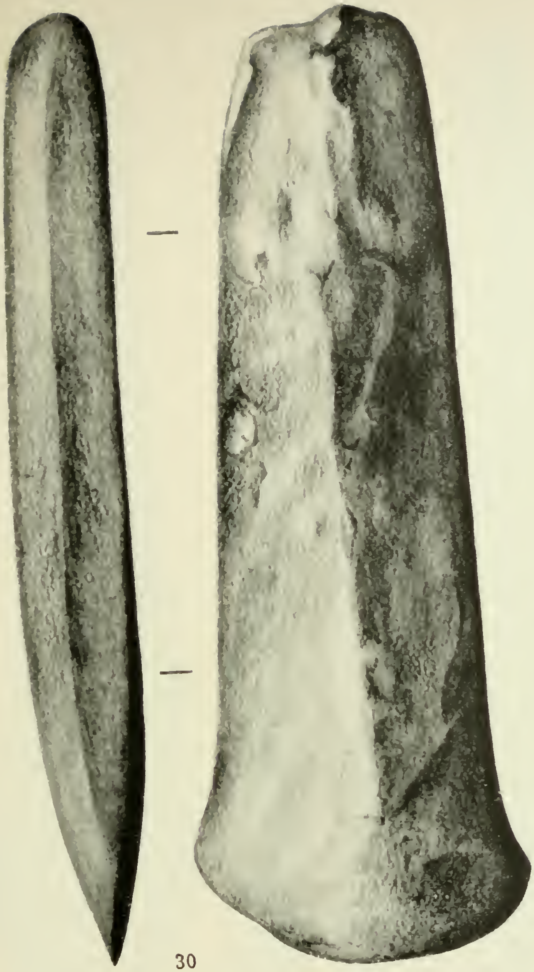

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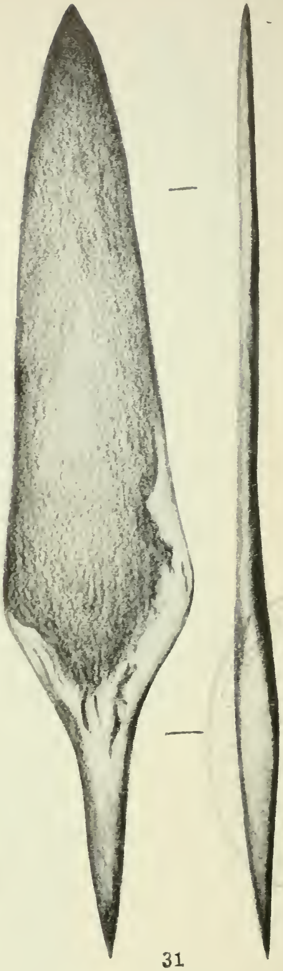

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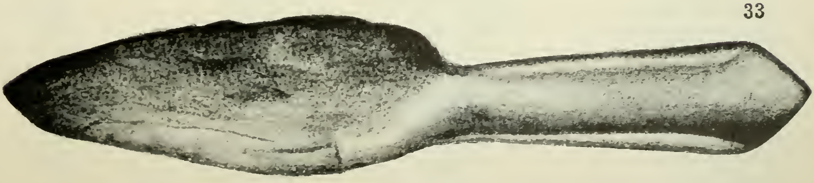

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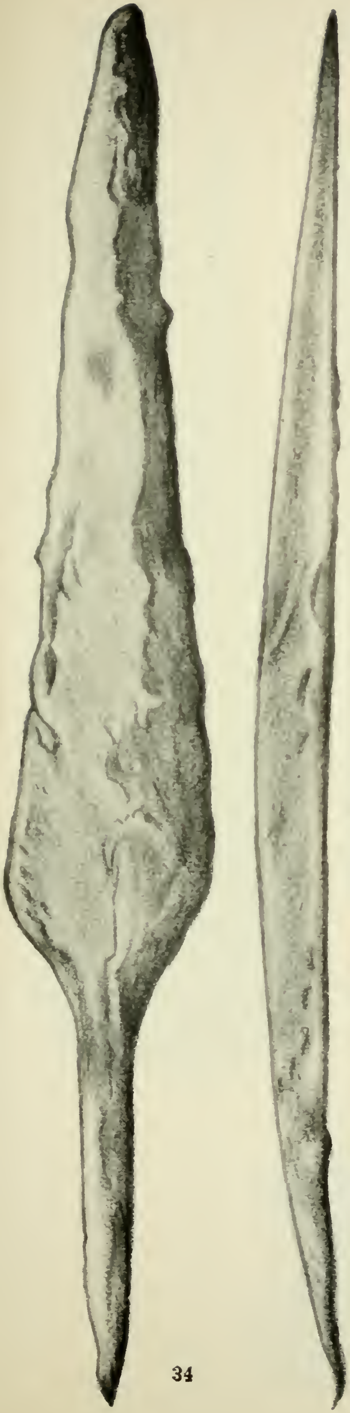
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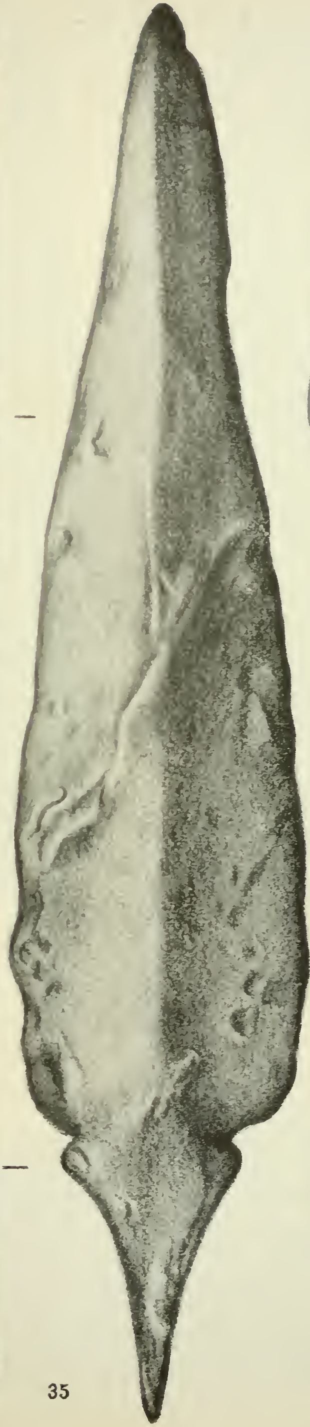
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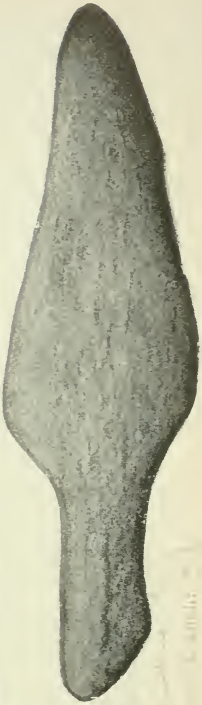
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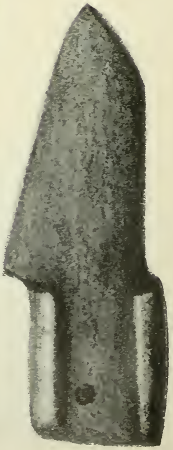
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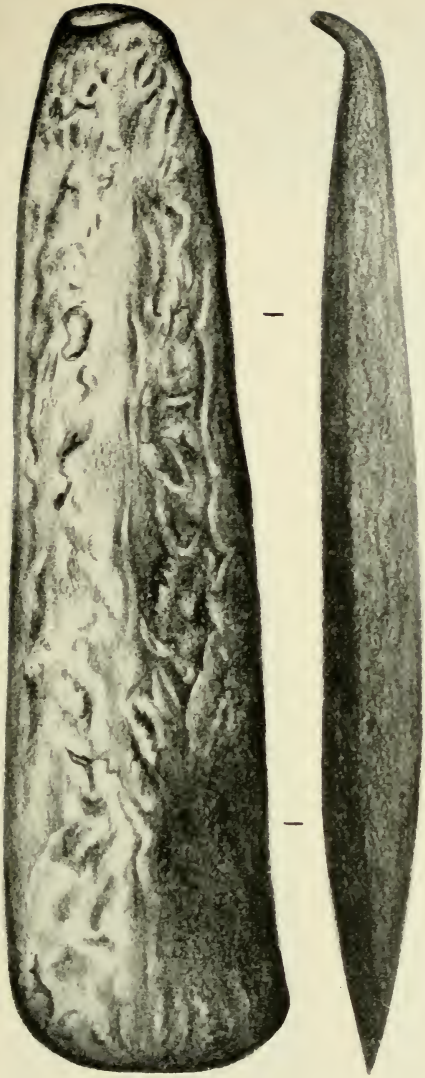

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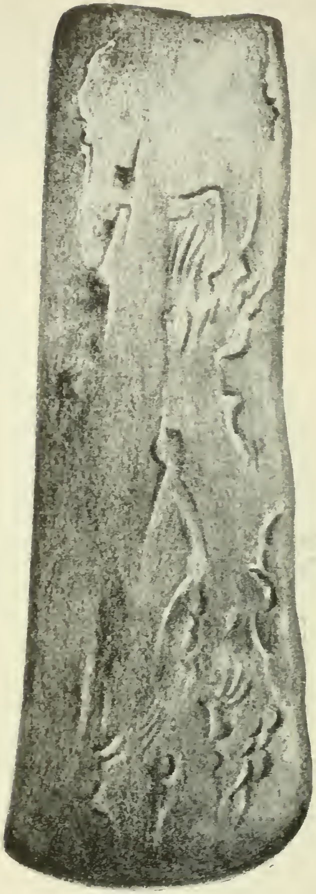

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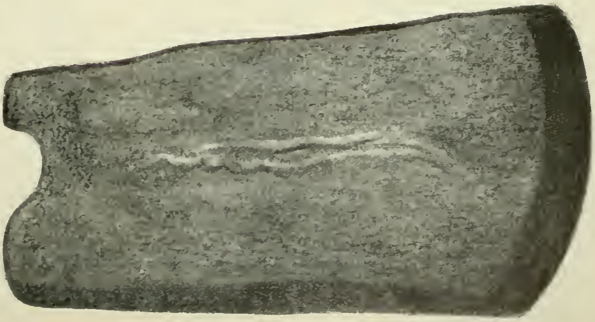

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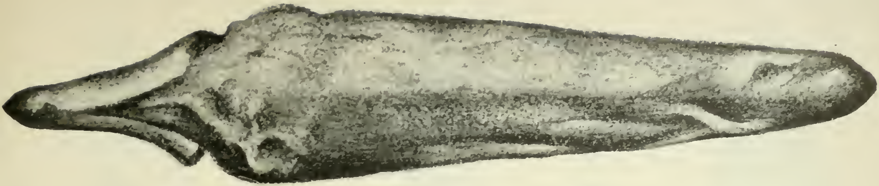

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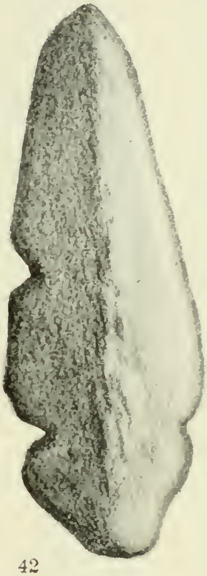

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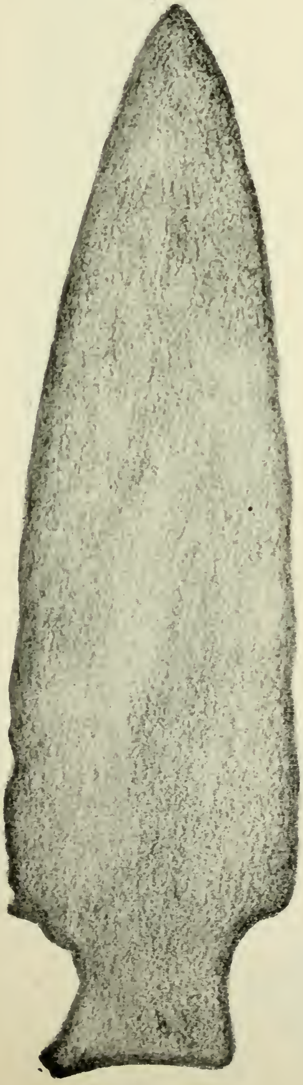

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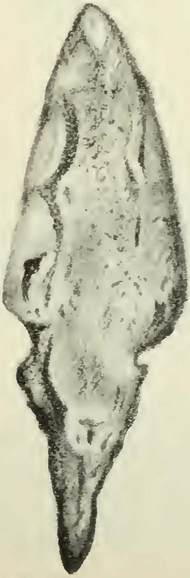

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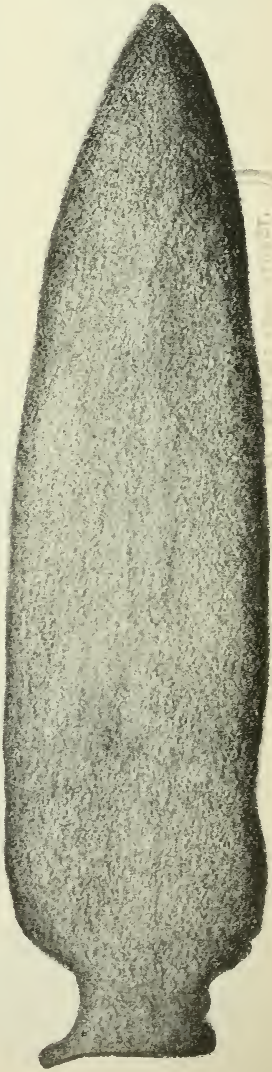

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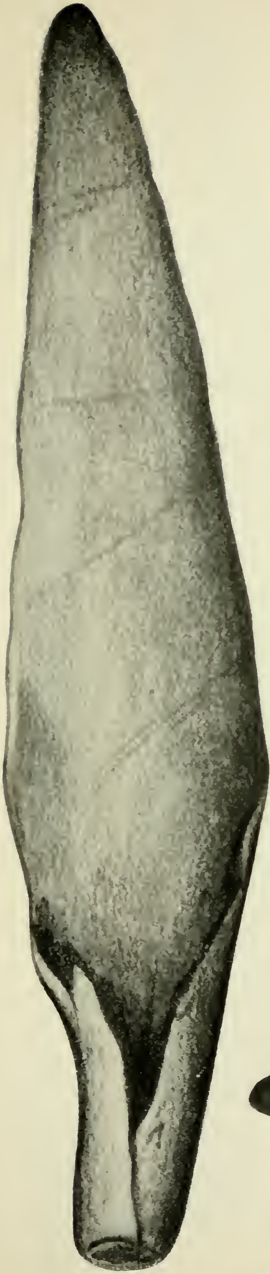

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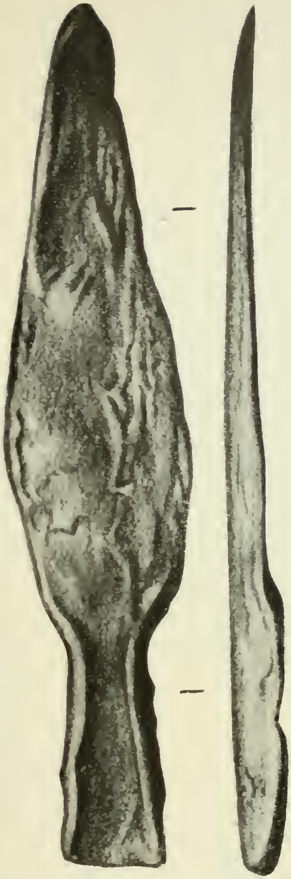

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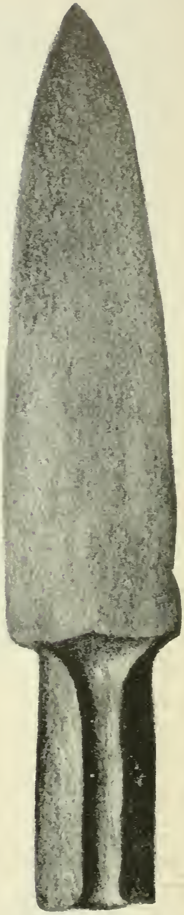

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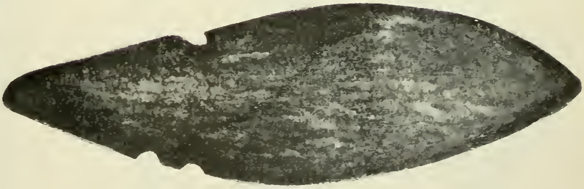

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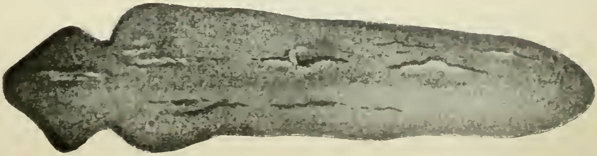

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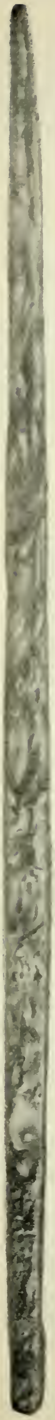

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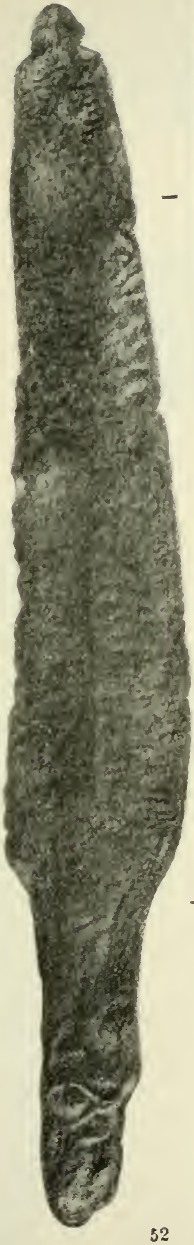

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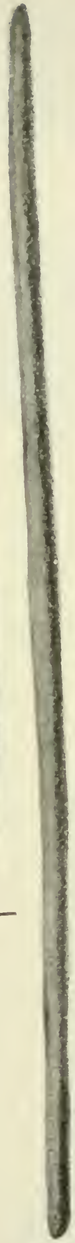

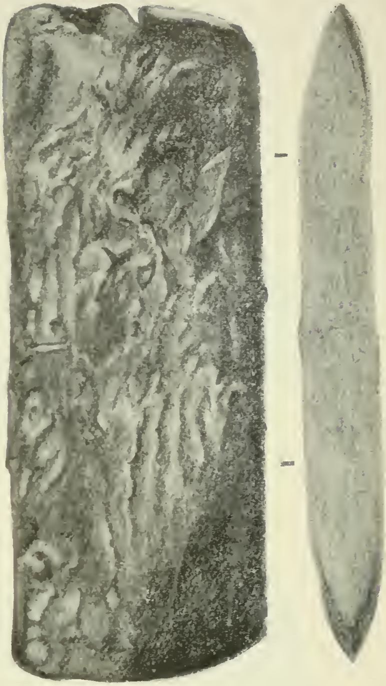

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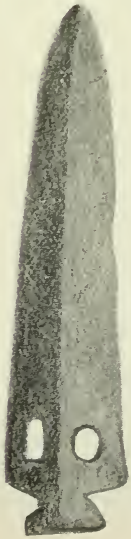

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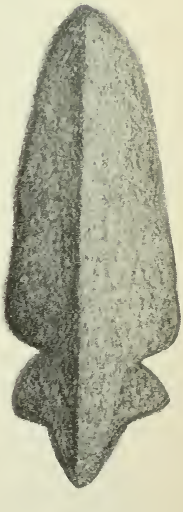

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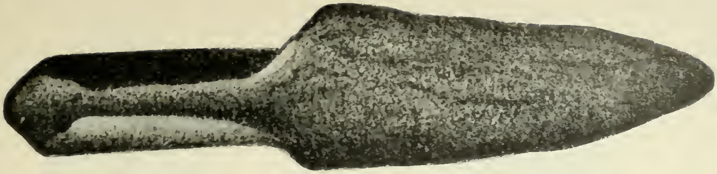
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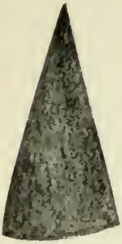
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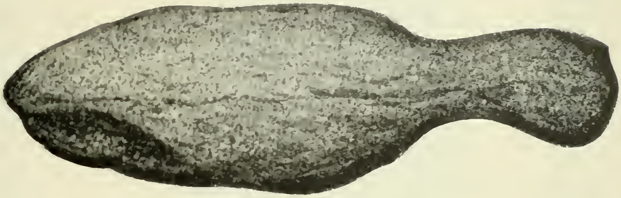
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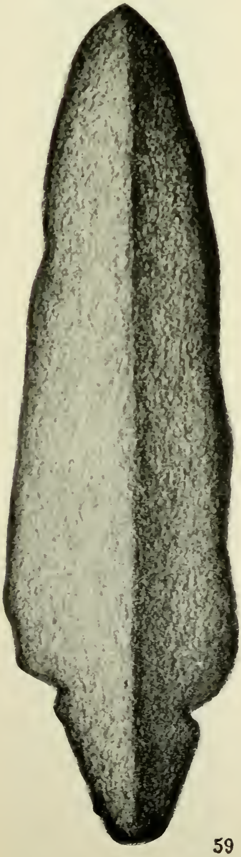
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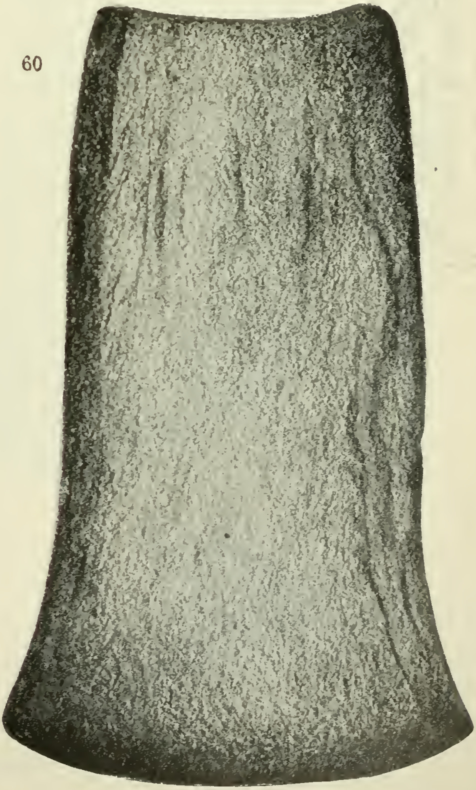
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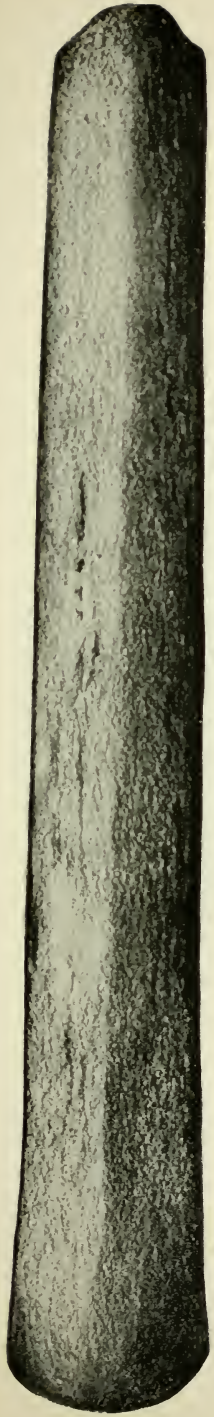

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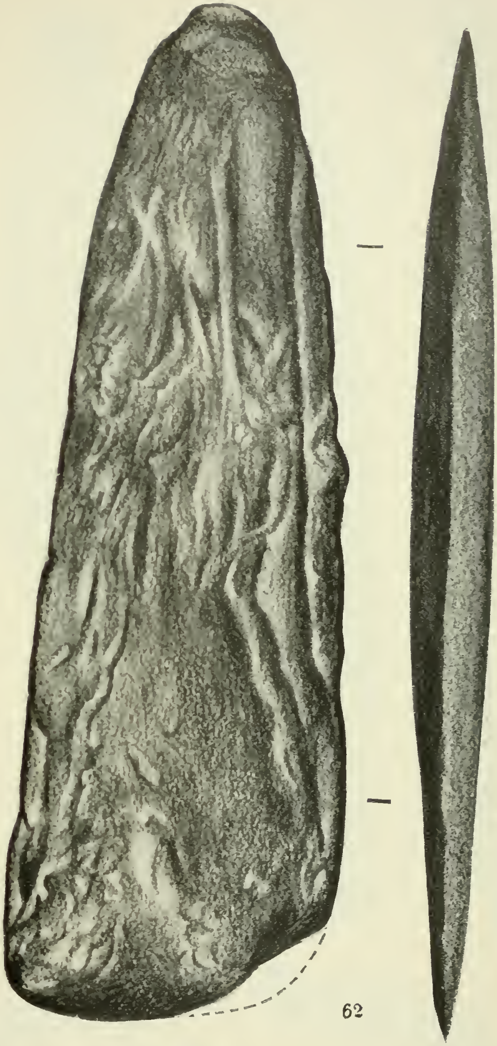

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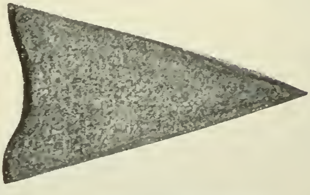

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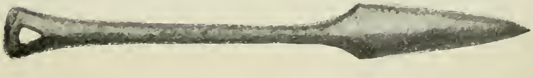

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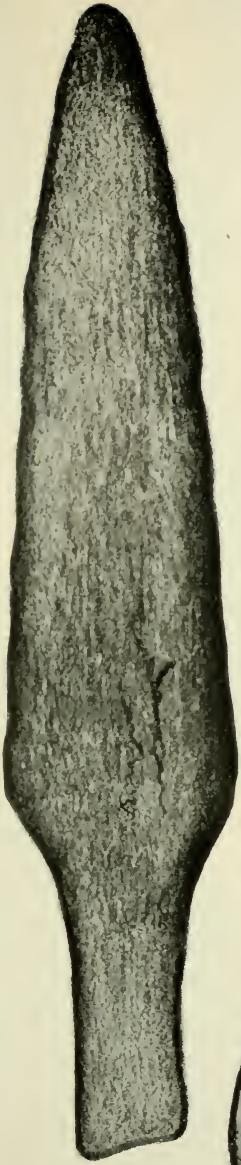

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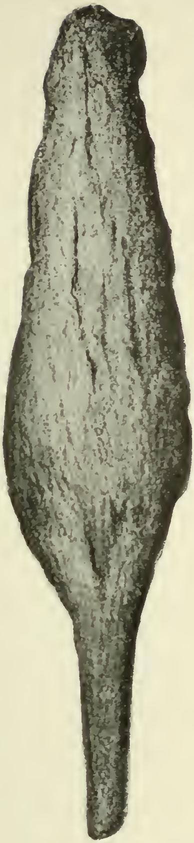

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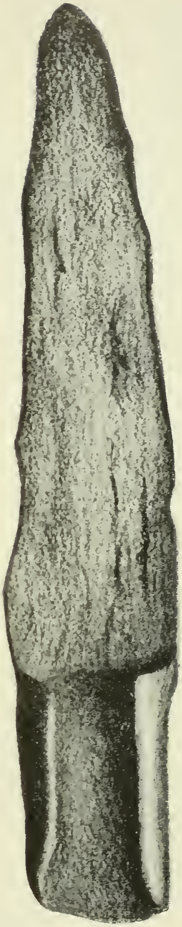

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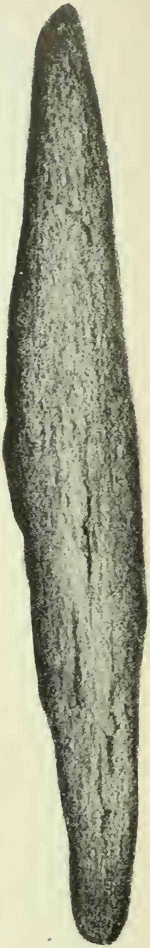

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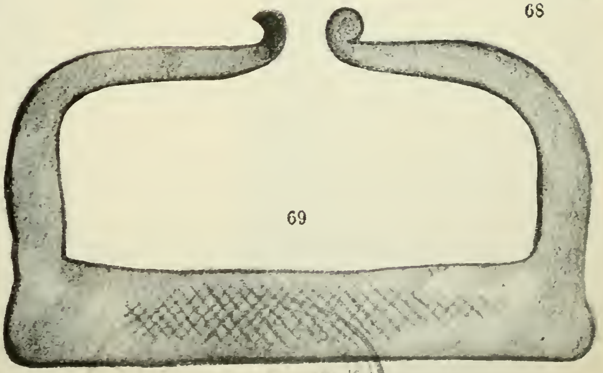

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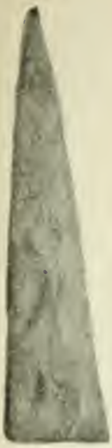

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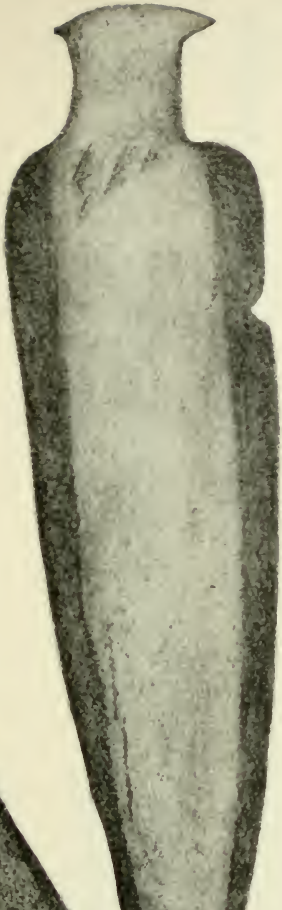

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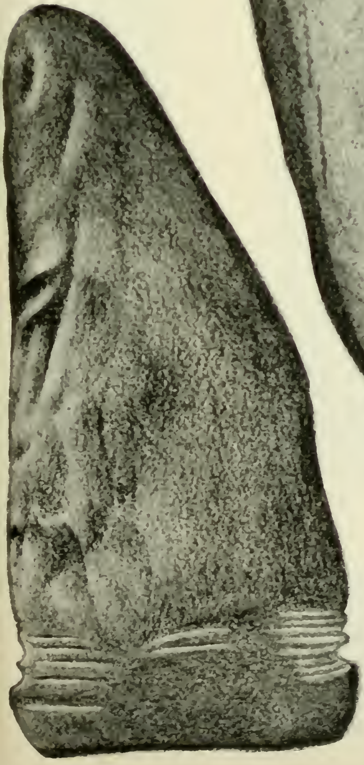

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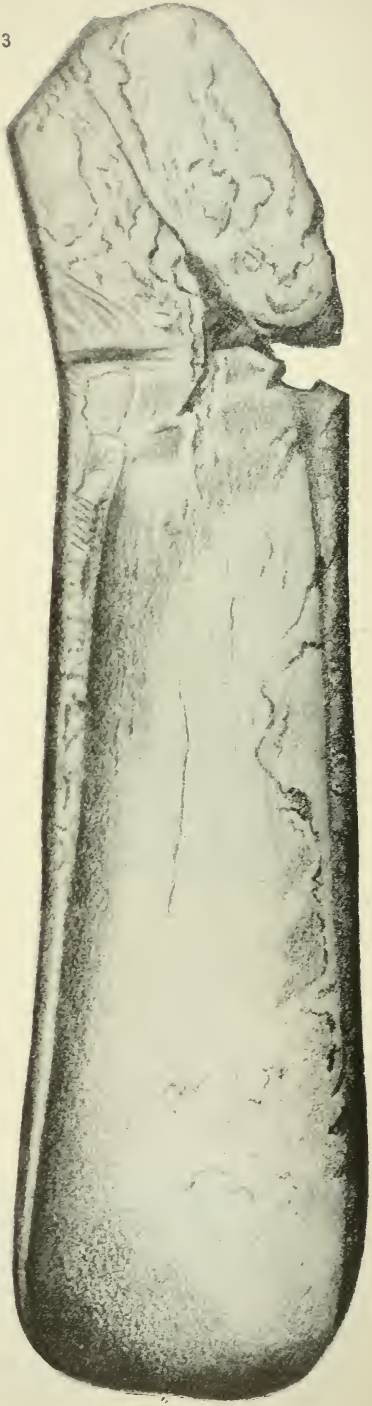

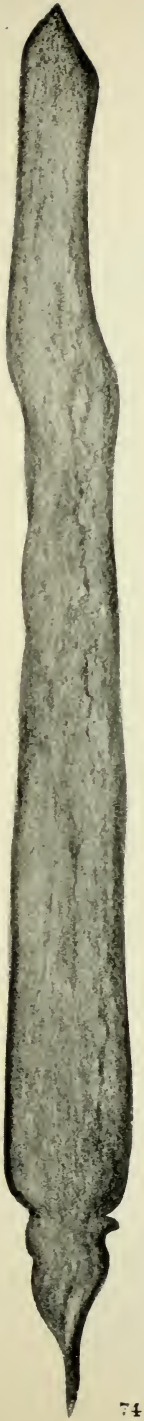

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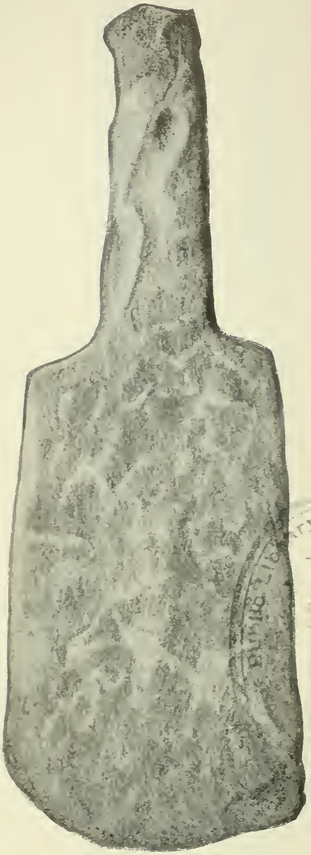

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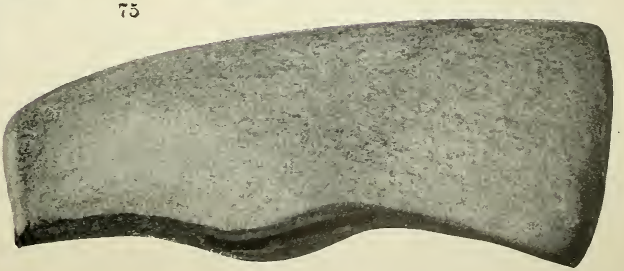

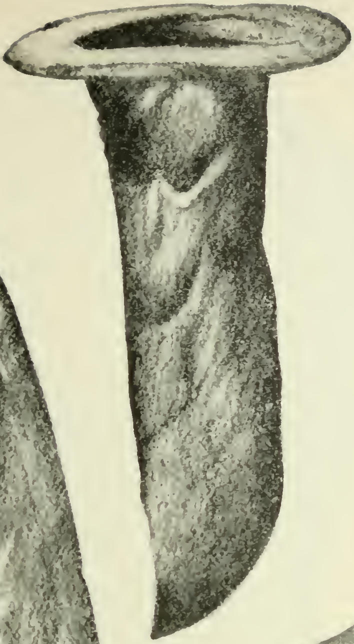
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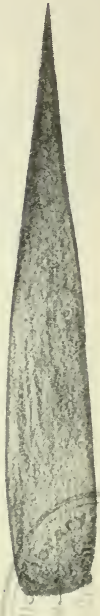
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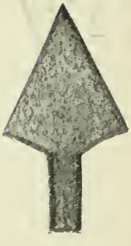
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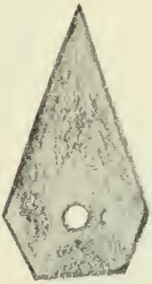
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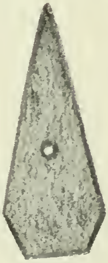
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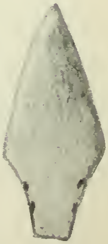
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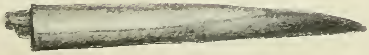
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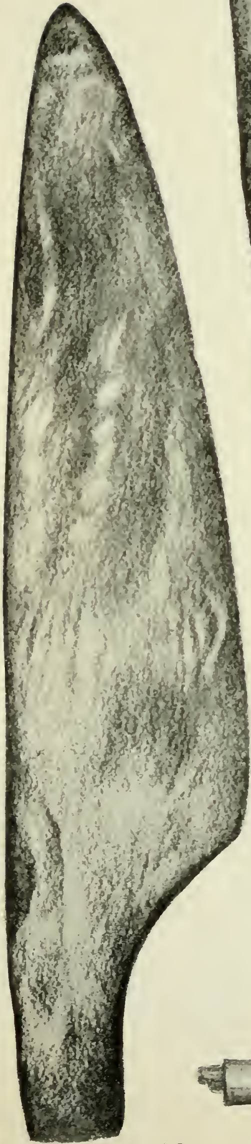
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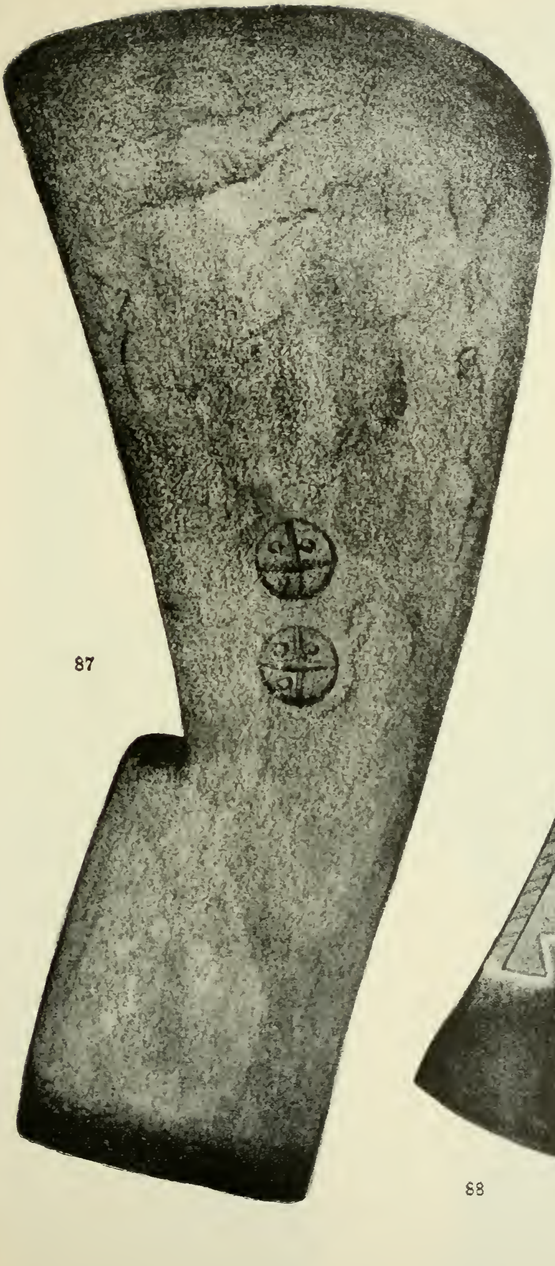

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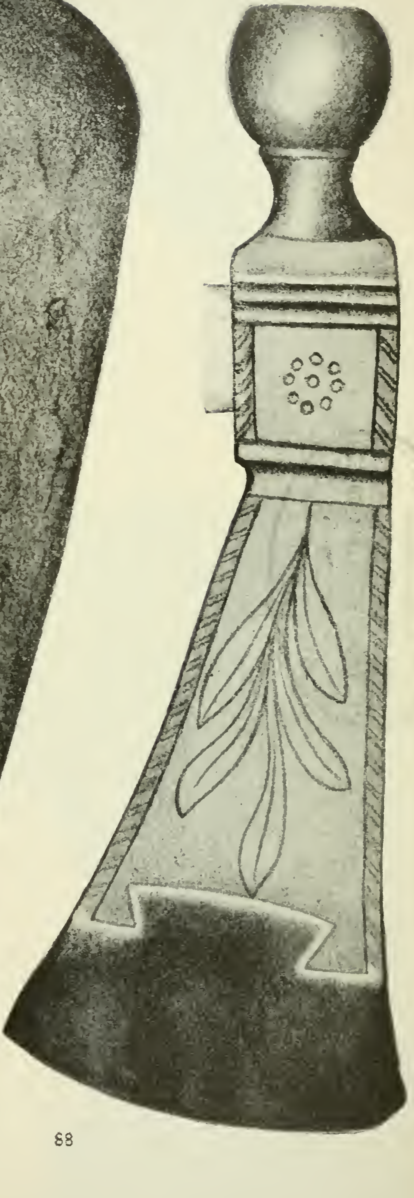

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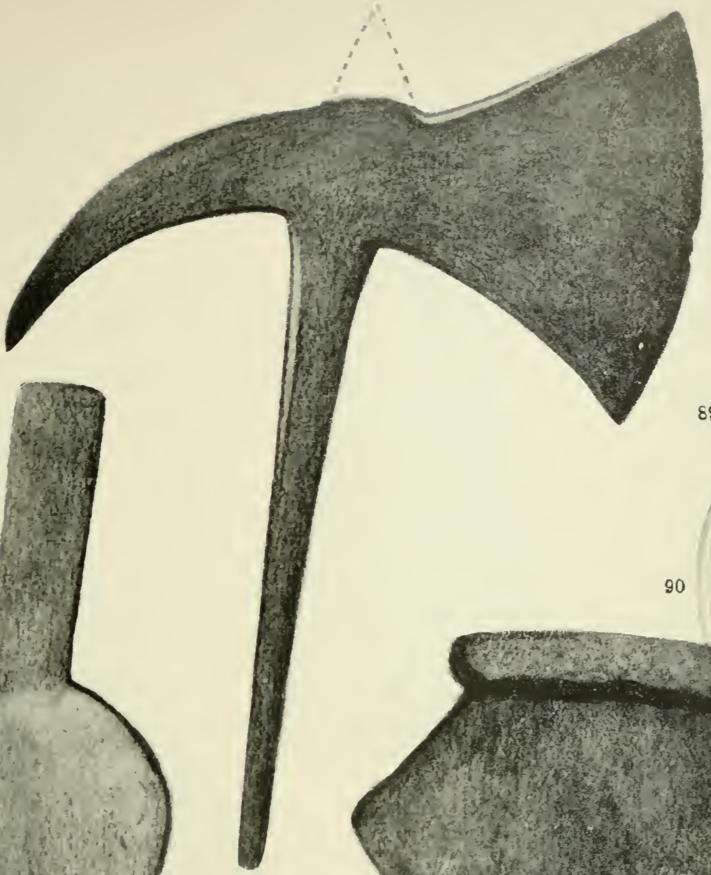

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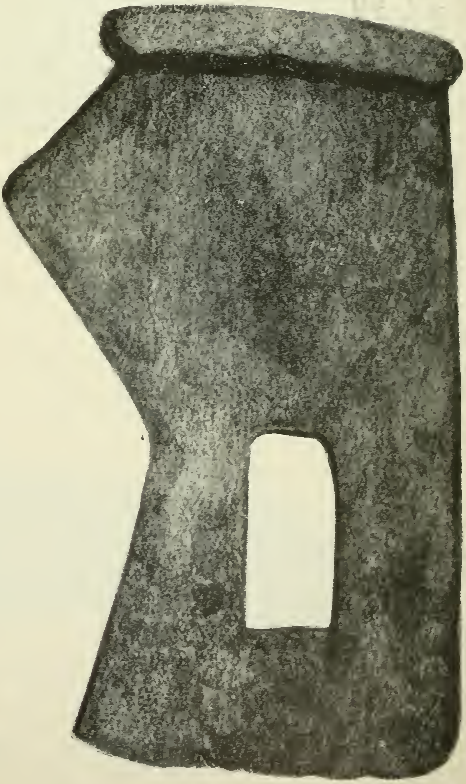

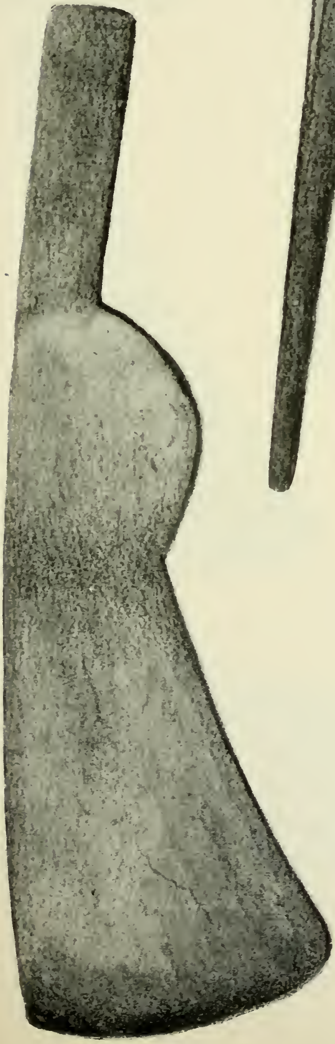

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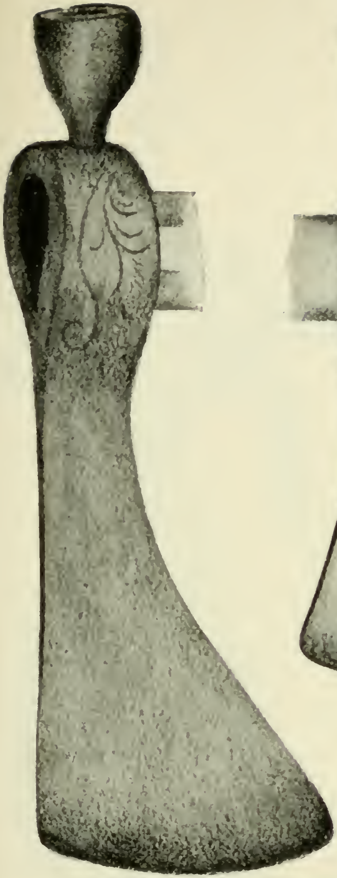

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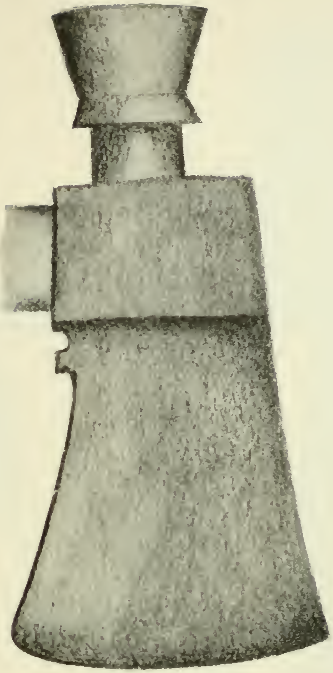

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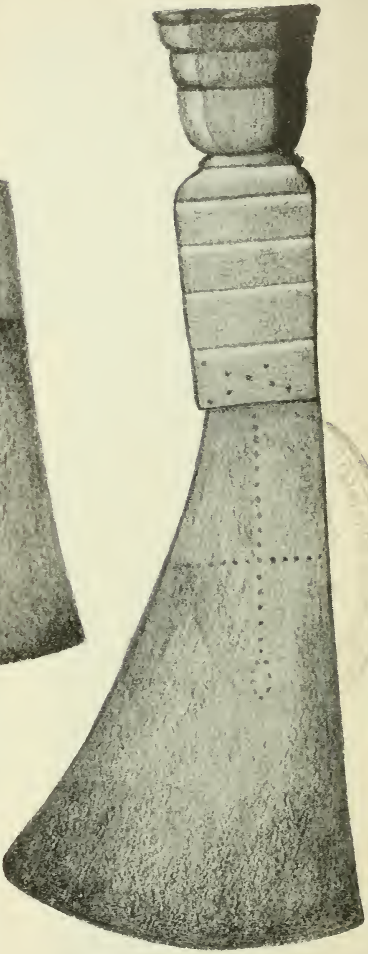

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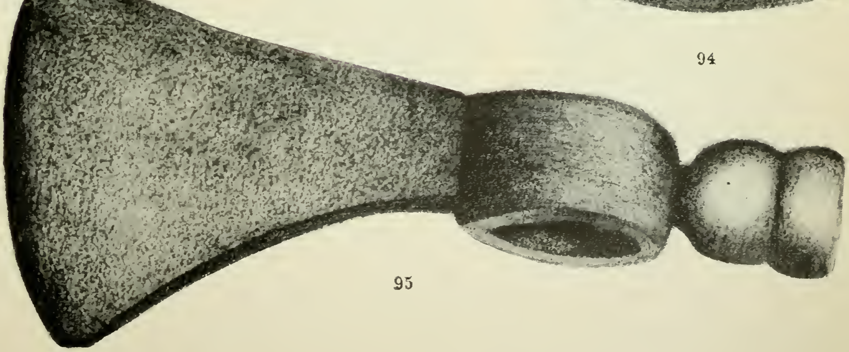

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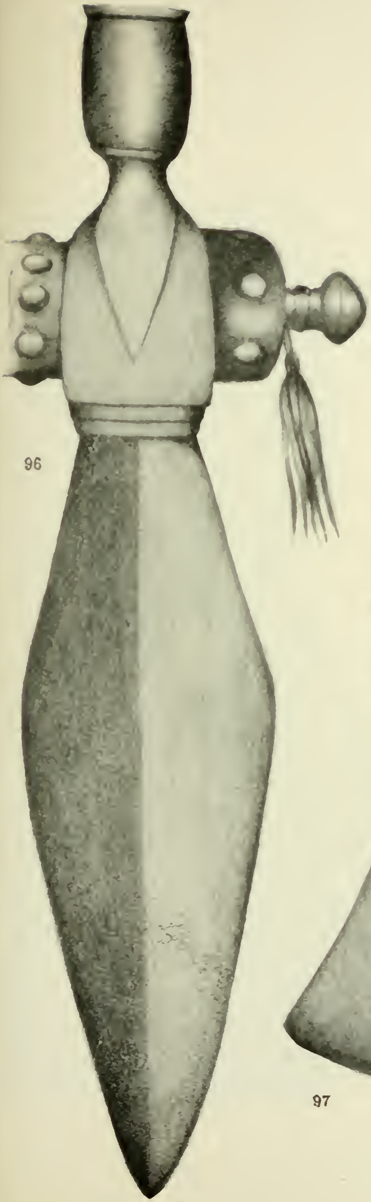

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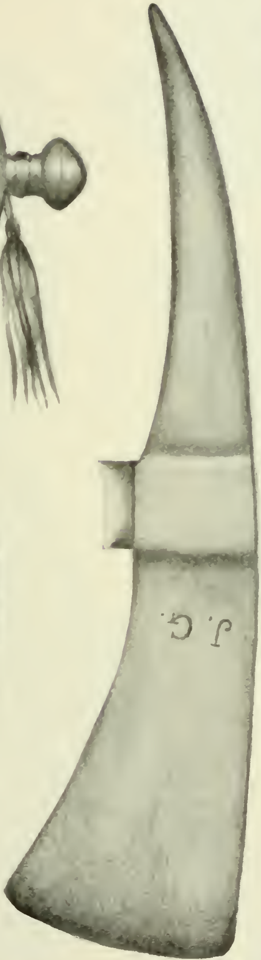

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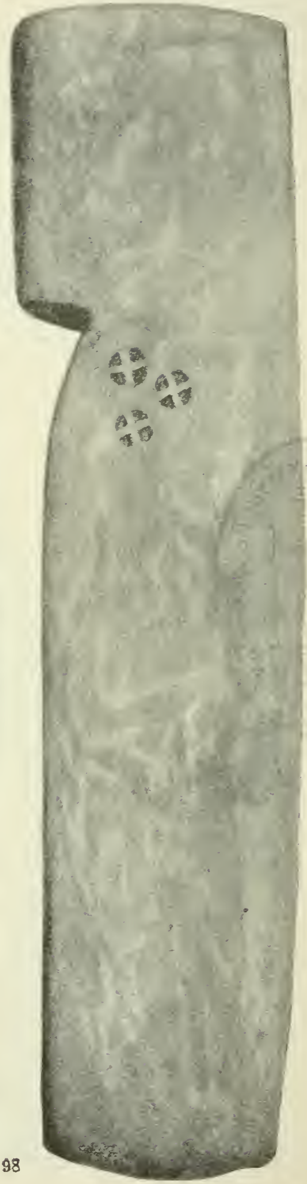

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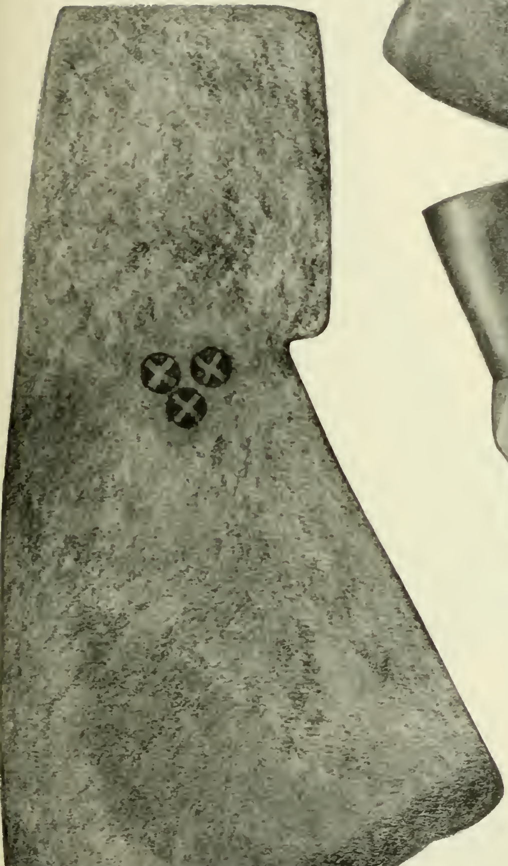
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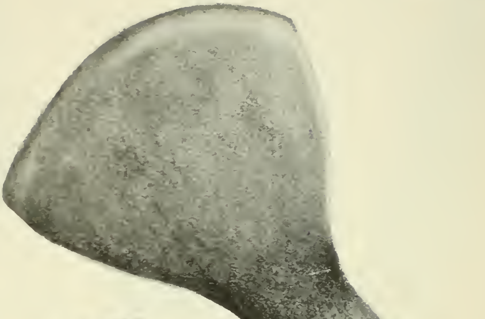
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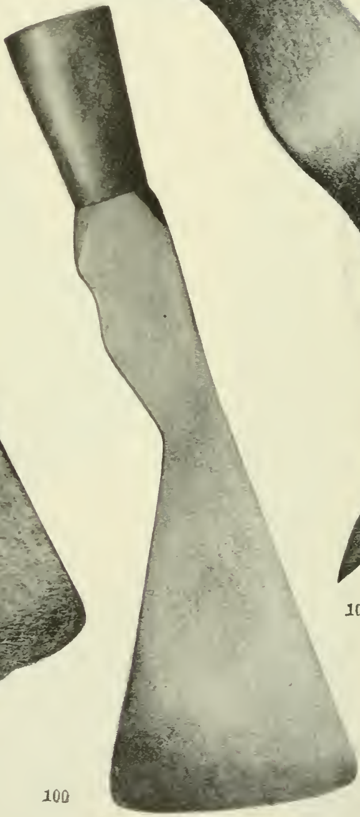
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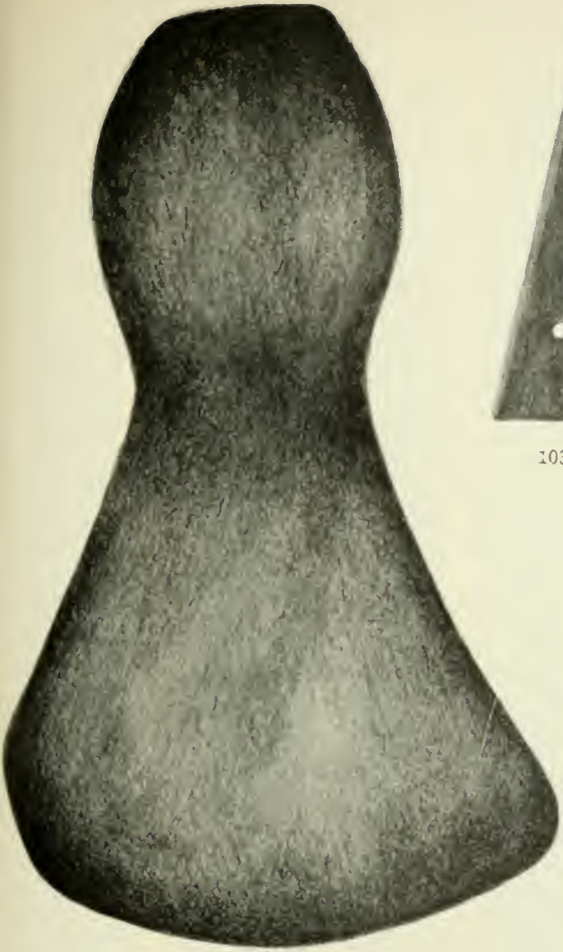

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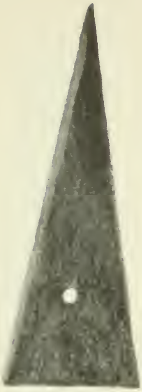

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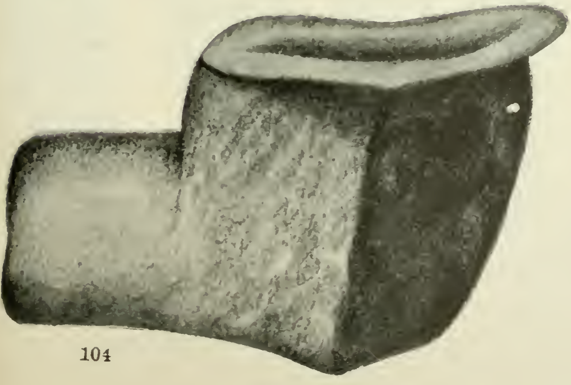

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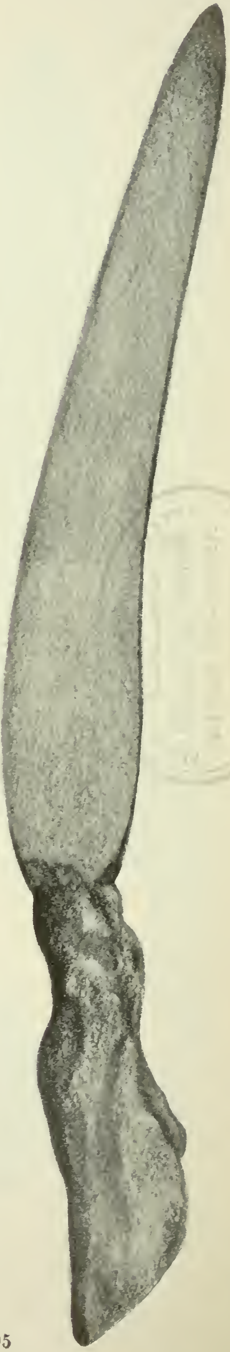

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Plate 26

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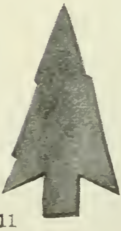
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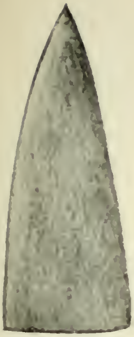
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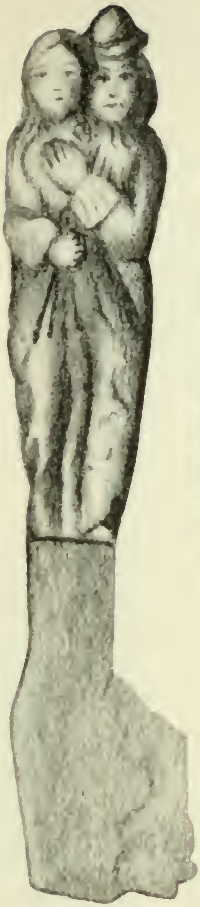
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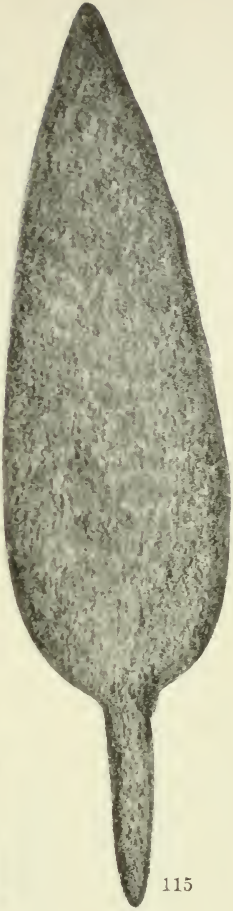
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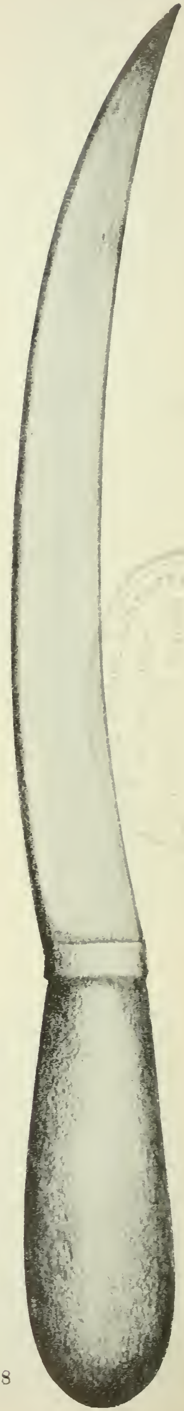
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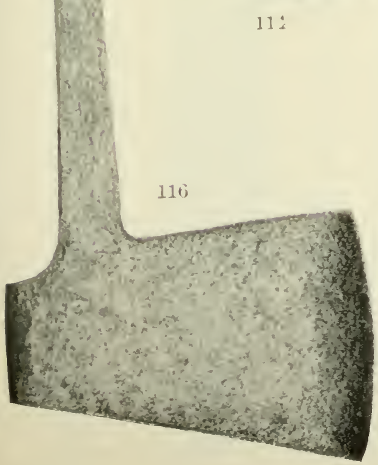
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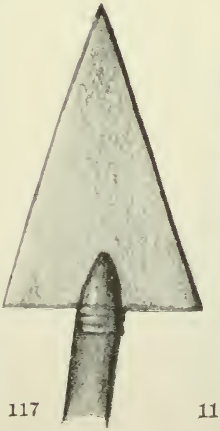
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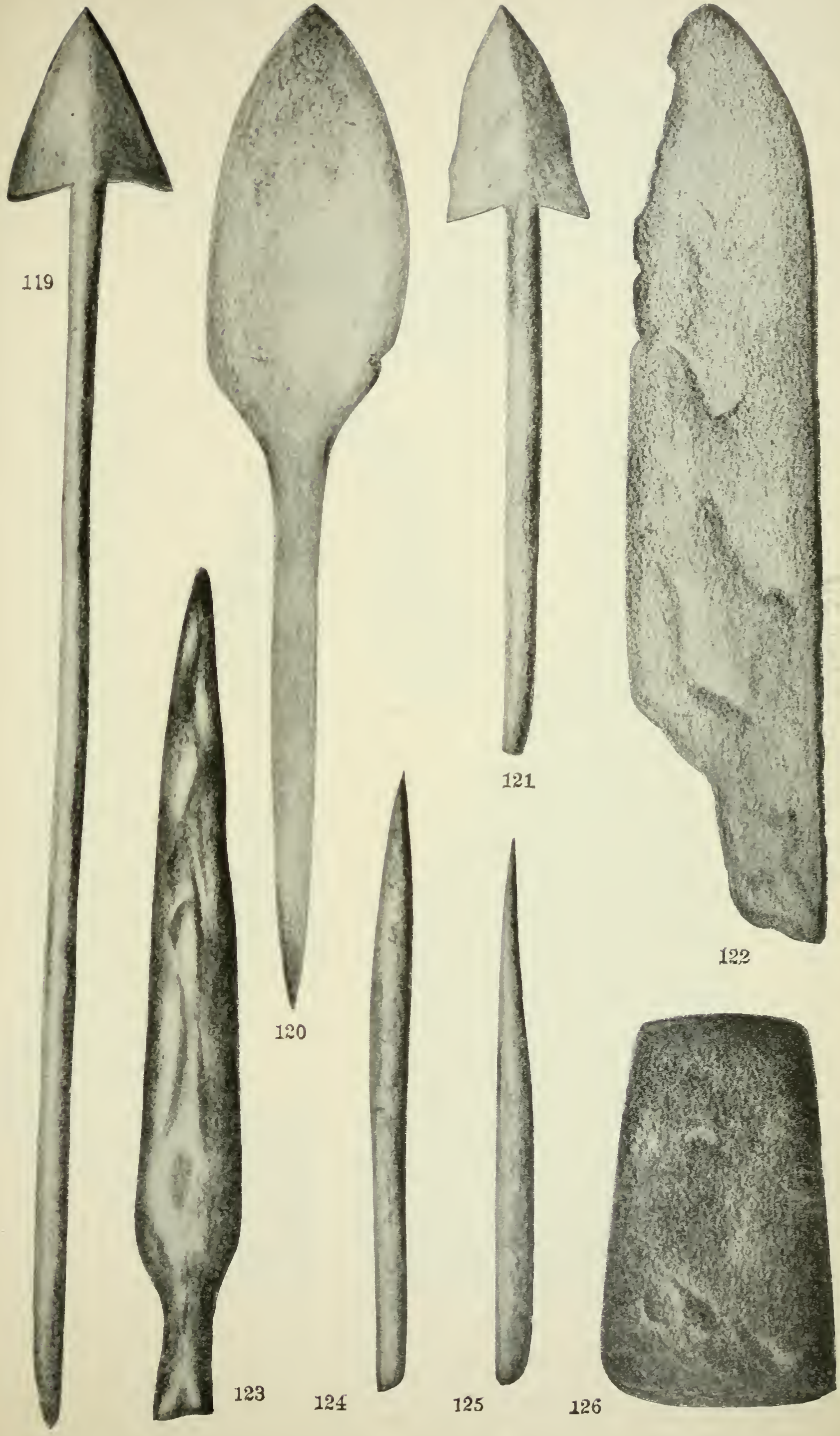

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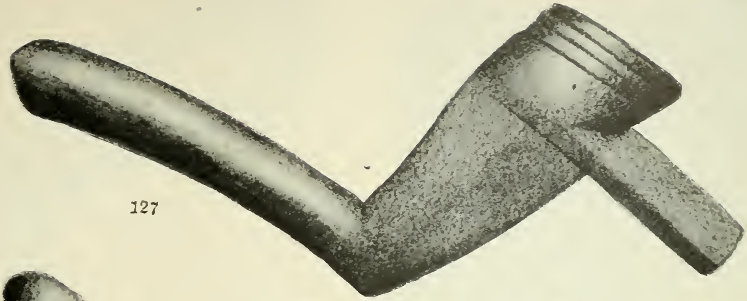
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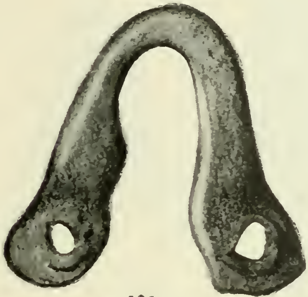
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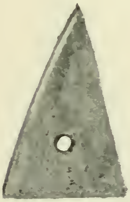
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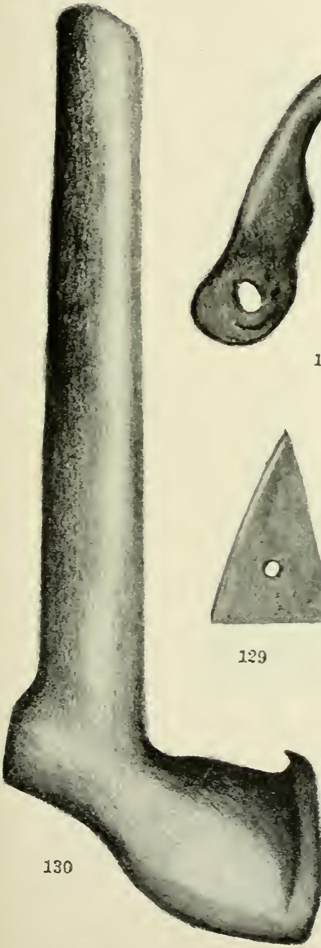
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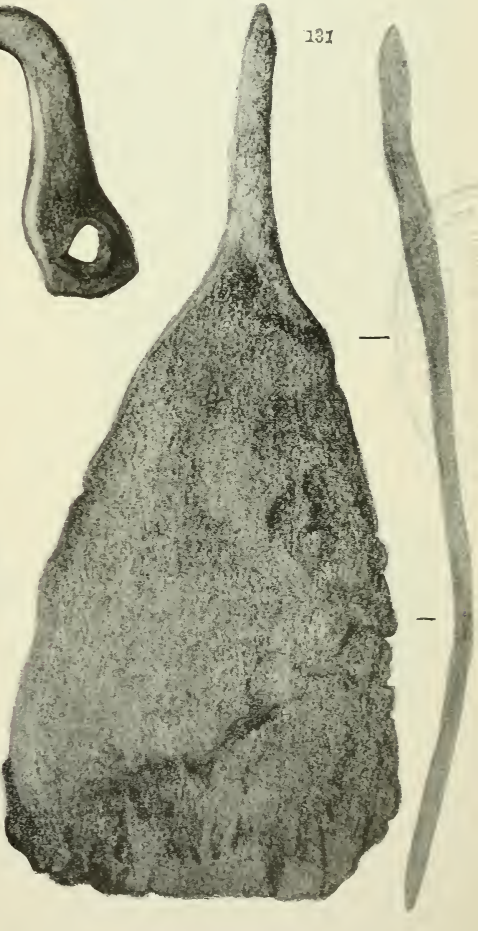
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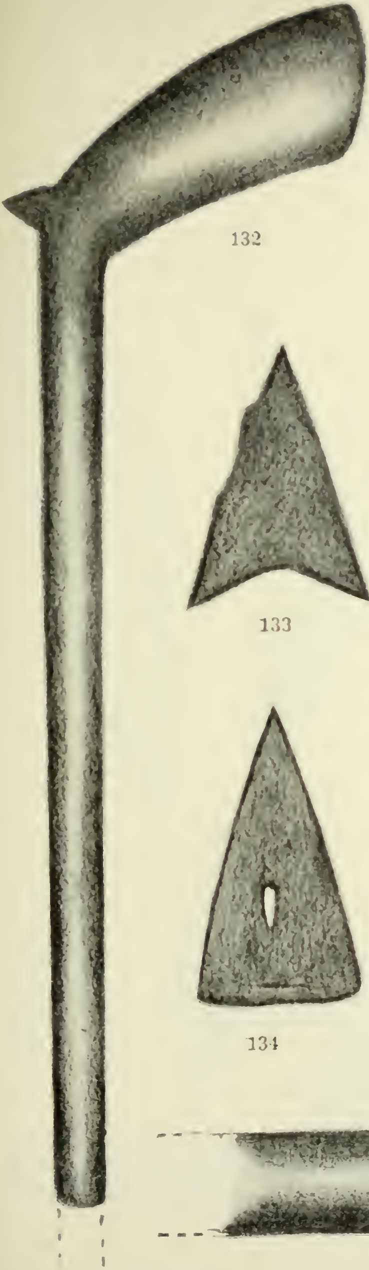

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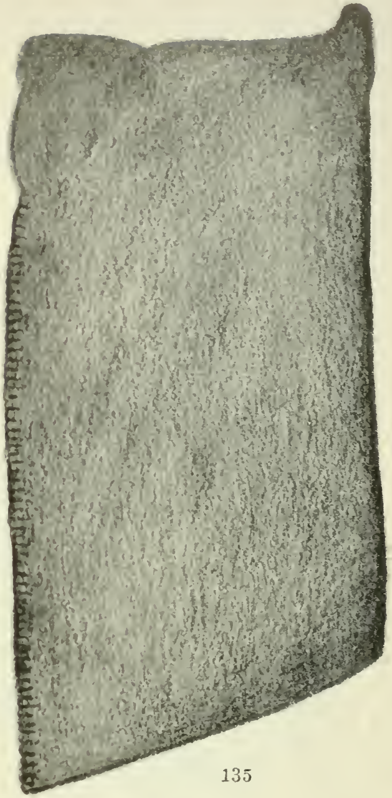

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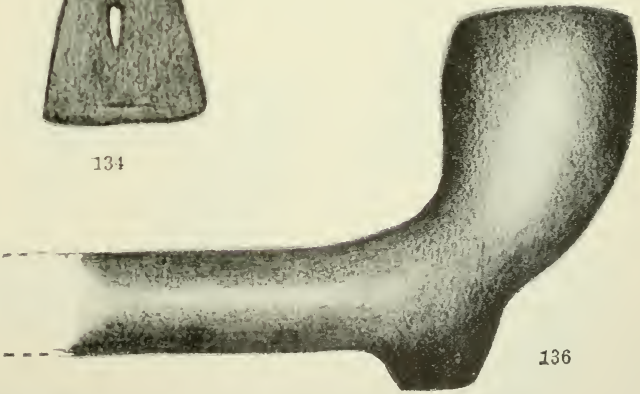

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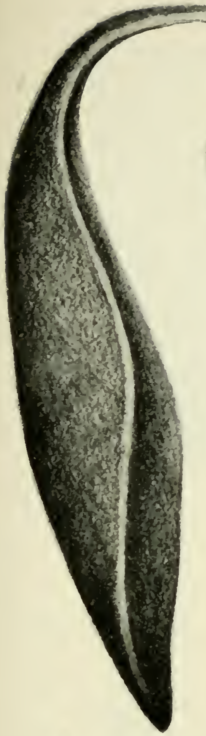

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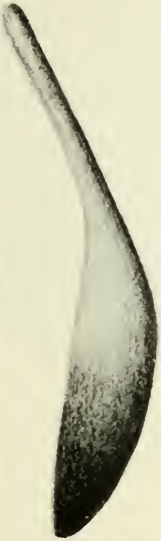

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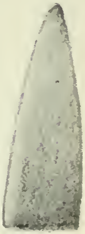

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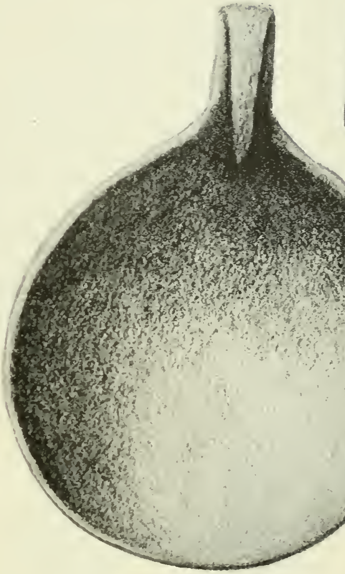

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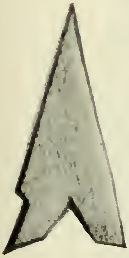

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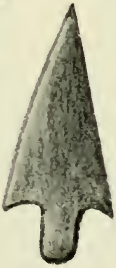

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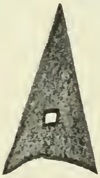

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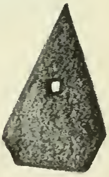

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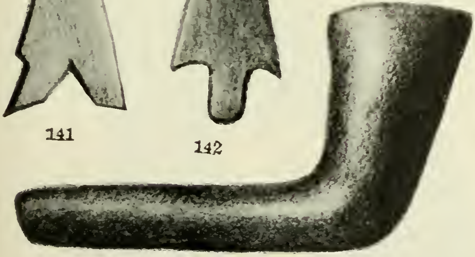

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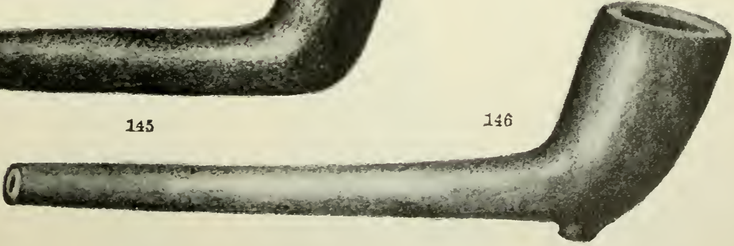

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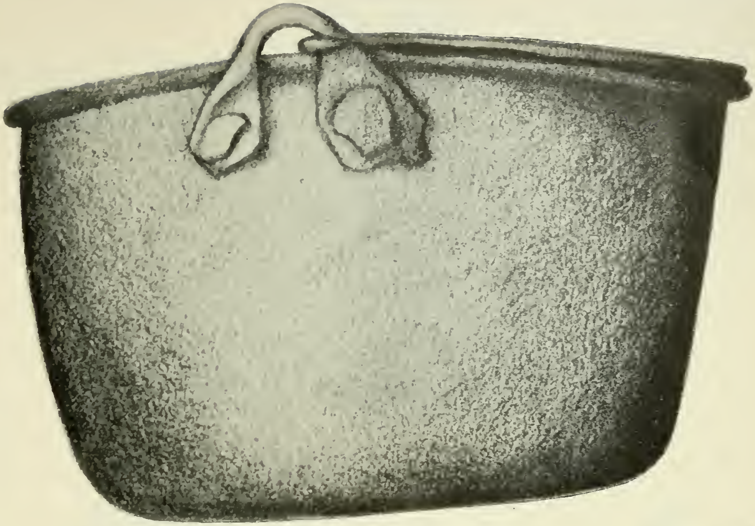
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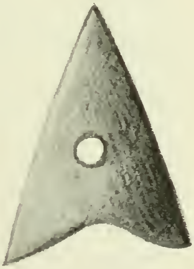
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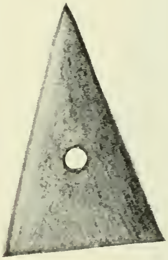
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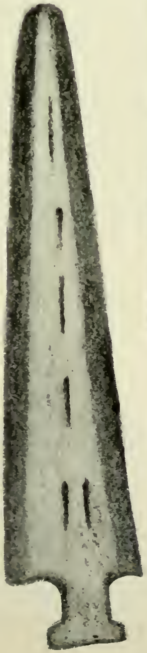
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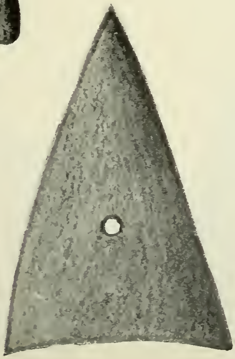
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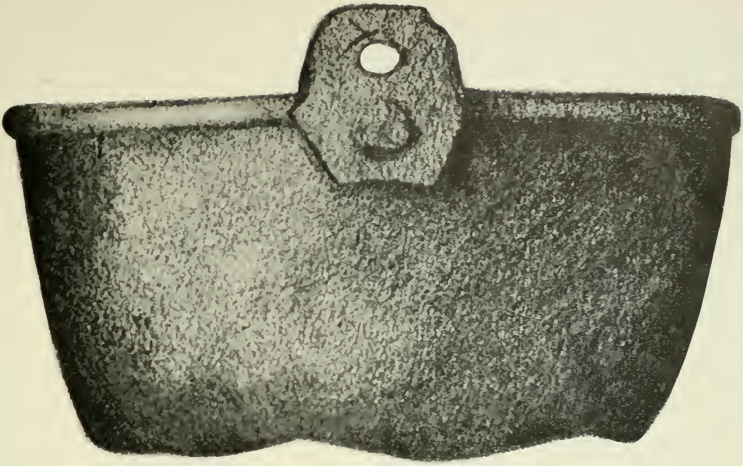

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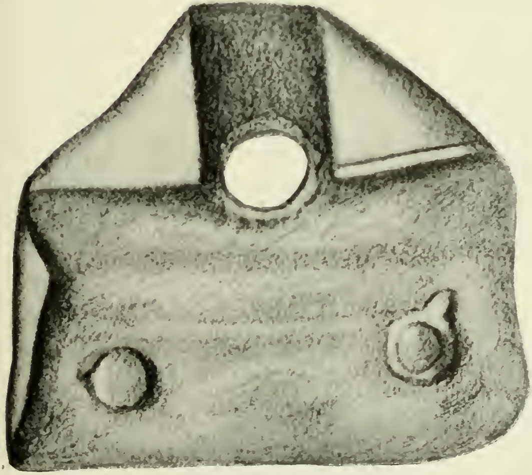

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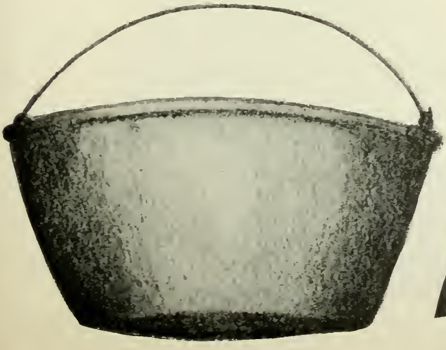

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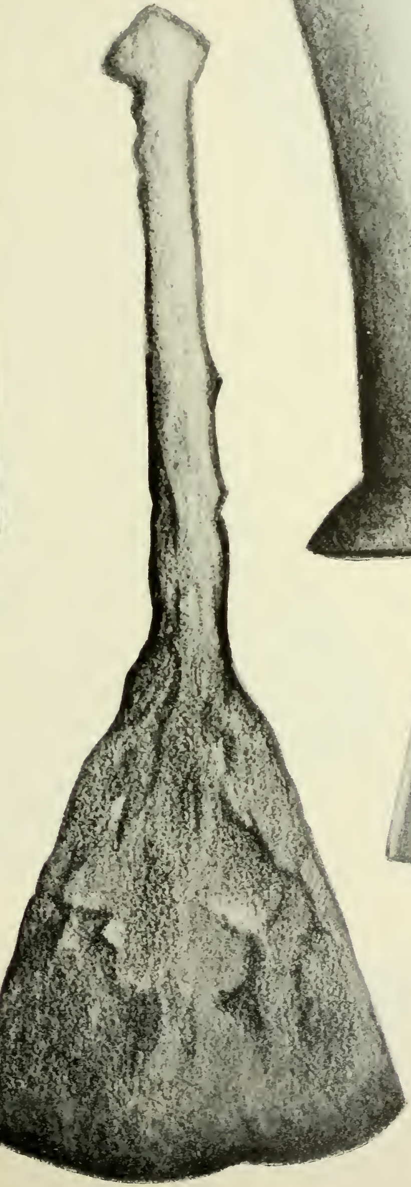

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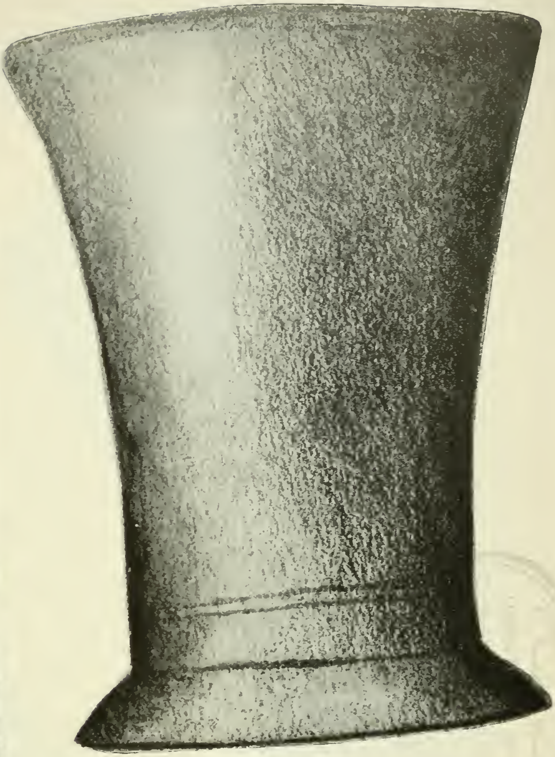

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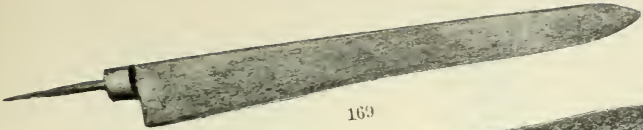

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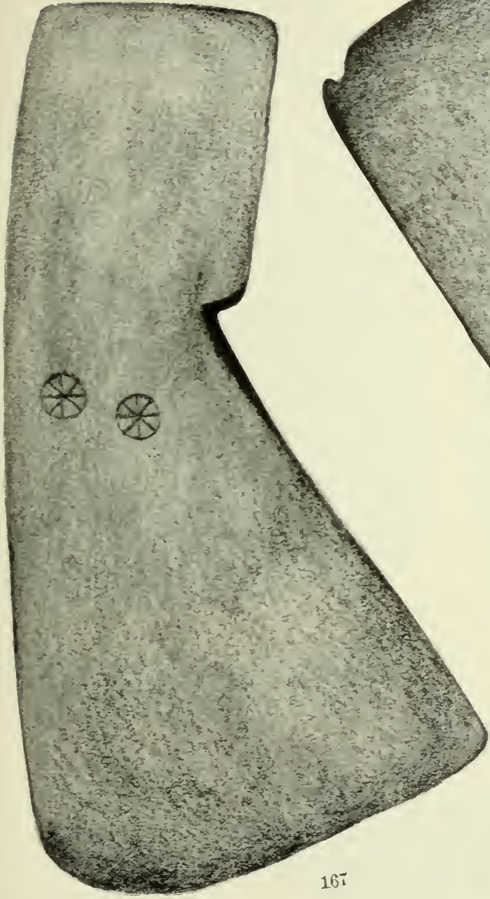

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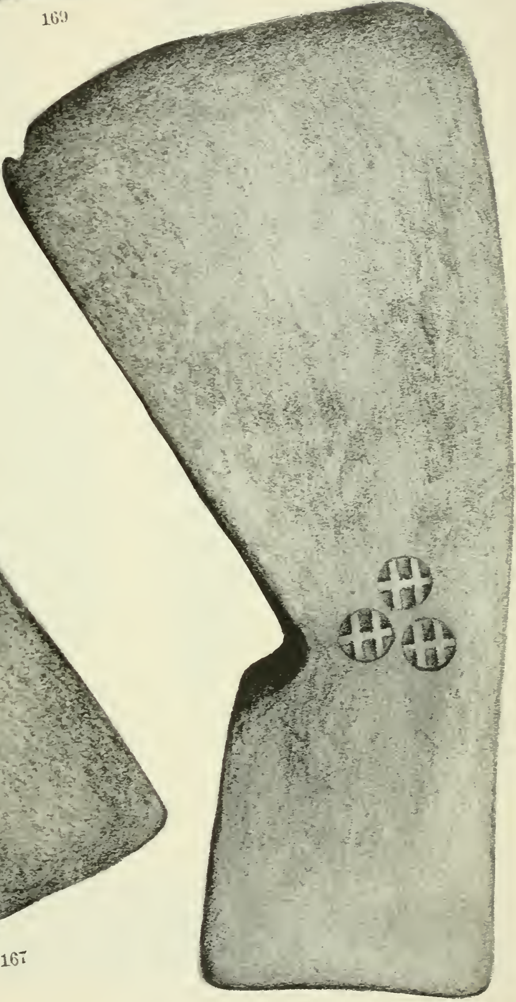

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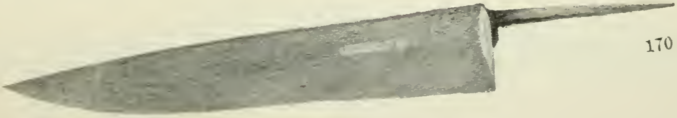

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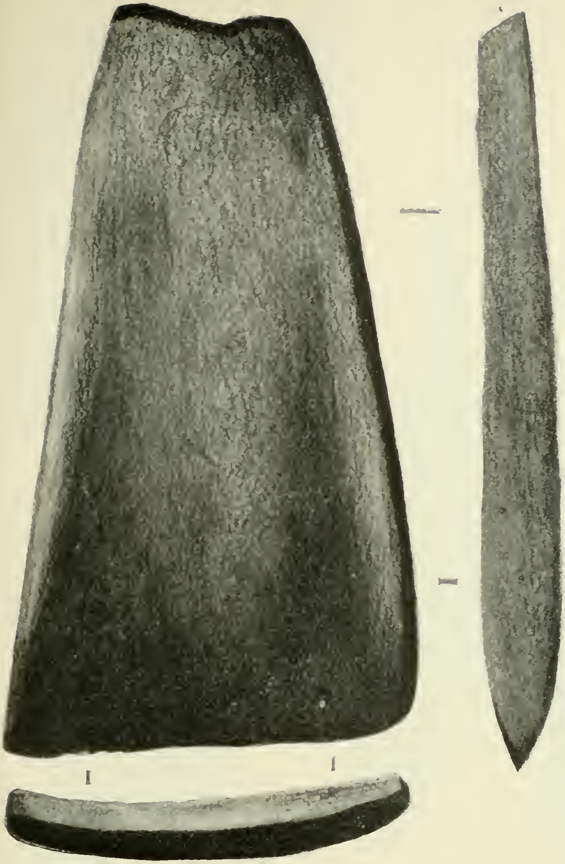

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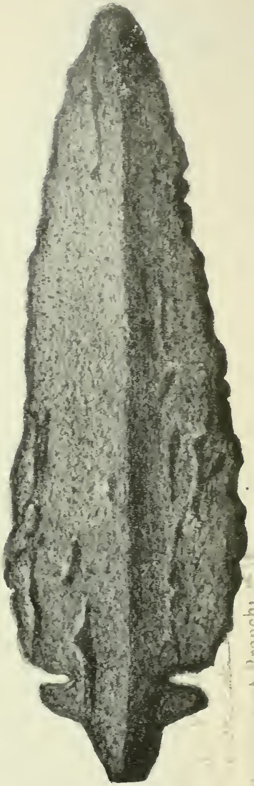

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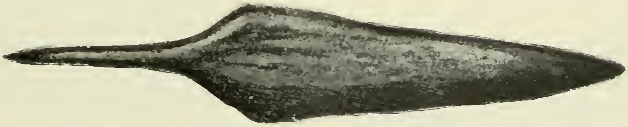

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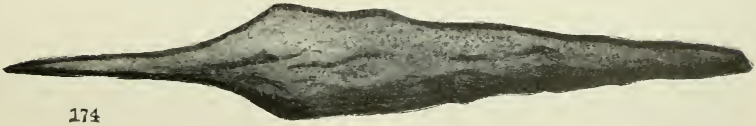

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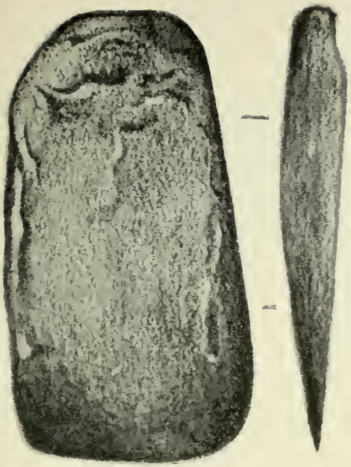
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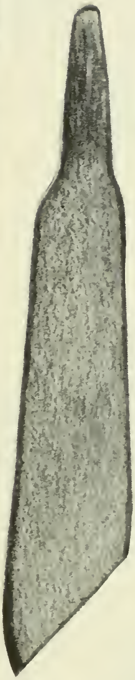
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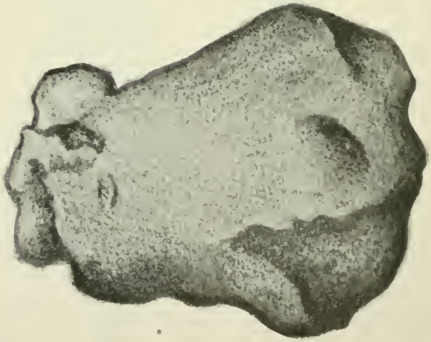
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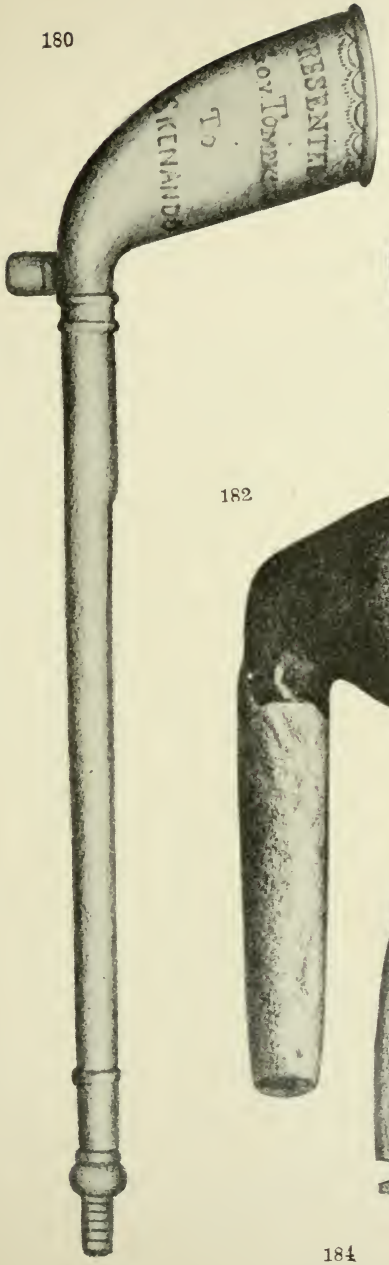

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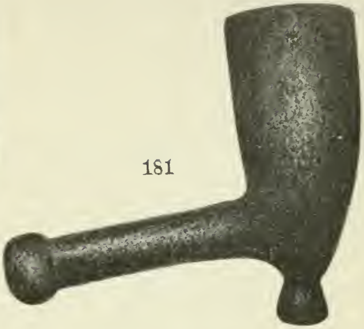

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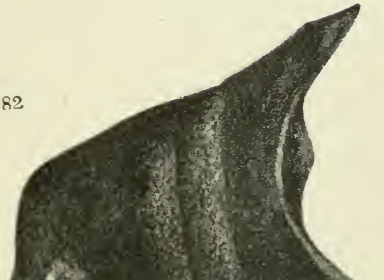

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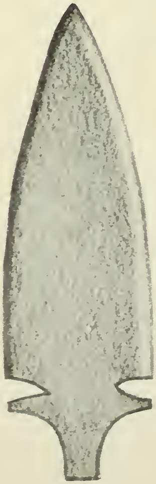

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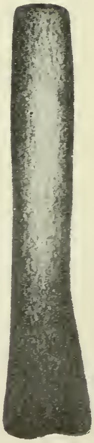

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New York State Museum

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NEW YORK INDIANS

LIST OF AUTHORITIES

Abbreviations at the left are used in the bulletin in exact reference to works in the following list:

Betts	**Betts, C. Wyllys.** American Colonial History Illustrated by Contemporaneous Medals; ed. by William T. R. Marvin M.A. N. Y. 1894.
Bourke	**Bourke, John G.** The Medicine Men of the Apache. U. S.—Ethnology, Bureau of. Rep't for 1887-88. Wash. 1892.
Boyle	**Boyle, David.** Annual Reports for 1888 and 1891. Toronto.
Brereton	**Brereton, John.** A Brief and True Relation of the Discovery of the North Part of Virginia. Lond. 1602. Mass. Hist. Soc. Collections. Ser. 3. v. 8. Bost. 1843.
Bruyas	**Bruyas, Jacques.** Radices Verborum Iroquaeorum; ed. by J. G. Shea. N. Y. 1863. Radical Words of the Mohawk Language. N. Y. State Mus. 16th An. Rep't, Apx. E, 1863. Same paging.
Bryant	**Bryant, William C.** Letter published in 1891.
Carr	**Carr, Lucien.** Dress and Ornaments of Certain American Indians. American Antiquarian Soc. Proc. Worcester Mass. 1897.
Clark	**Clark, J. V. H.** Onondaga; or Reminiscences of Earlier and Later Times. Syracuse 1849.
Conover	**Conover, George S.** Articles in newspapers of Geneva N. Y.

Converse	**Converse, Harriet Maxwell.** Iroquois Silver Brooches. N. Y. State Mus. 54th An. Rep't 1900.
Converse. Letters	——— Letters to Rev. Dr Beauchamp.
Fisher	**Fisher, J. T.** American Medals of the Revolution. Mass. Hist. Soc. Collections. Ser. 3. v. 6.
Frey	**Frey, S. L.** Were they Mound-builders? American Naturalist, Oct. 1879.
Frey. Letters	——— Letters to Rev. Dr Beauchamp.
Halsey	**Halsey, Francis Whiting.** The Old New York Frontier. N. Y. 1901.
Harper's	**Harper's Magazine,** v. 32. N. Y. 1866.
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Henry	**Henry, Alexander.** Travels and Adventures in Canada and the Indian Territories, etc.; ed. by James Bain. Toronto 1901.
Johnson	**Johnson, Crisfield.** Centennial History of Erie County. Buffalo 1876.
Jones	**Jones, Charles C.** Silver Crosses from an Indian Grave-mound at Coosawatee Old Town, Murray County, Georgia. Smithsonian Rep't 1881. p. 619.
Ketchum	**Ketchum, William.** An Authentic and Complete History of Buffalo. Buffalo 1864. Lettered *Buffalo and the Senecas*, and commonly thus known.
Kingman	**Kingman, Henry E.** Letter to Rev. Dr Beauchamp.
Leroux	**Leroux, Joseph.** Medaillier du Canada, or Canadian Coin Cabinet. Montreal 1888.
Loskiel	**Loskiel, G. H:** History of the Missions of the United Brethren among the Indians in North America; tr. from the German by C. I. La Trobe. Lond. 1794.
McLachlan	**McLachlan, R. W.** American Numismatical and Archaeological Society of New York. Proc. N. Y. 1883.
McLachlan. Jour.	——— The Canadian Antiquarian and Numismatic Journal, published by the Numismatic and Antiquarian Society of Montreal. Ser. 3. Montreal 1899. v. 2.

McLachlan. Letters	——— Letters to Rev. Dr Beauchamp.
Massachusetts	**Massachusetts.** Hist. Soc. Collections. Ser. 3.
Millard	**Millard, Clara.** The Amateur Trader. Teddington, Middlesex, Eng. 1901.
Miner	**Miner, Charles.** History of Wyoming; in a series of letters to his son, William Penn Miner, esq. Phil. 1845.
Montanus	**Montanus, Arnoldus.** Description of New Netherland. Documentary History of the State of New York. Alb. 1851. 4:75-83.
Morgan	**Morgan, L. H.** League of the *Ho-de-no-sau-nee* or Iroquois. Rochester 1851.
Morgan. Fabrics etc.	——— Fabrics, Inventions, Implements and Utensils of the Iroquois. N. Y. State Mus. Rep't. 1852. p. 67-117.
N. H.	**New Hampshire** Hist. Soc. Collections. Concord 1824.
O'Callaghan	**O'Callaghan, E. B.** *ed.* Documentary History of the State of New York. Alb. 1849-51.
O'Callaghan. Col. Hist.	——— Documents Relative to the Colonial History of the State of New York. Alb. 1853-87.
O'Callaghan. Lettres	——— Lettres edifiantes et curieuses. Biographical sketch of Abbé Francois Picquet, abridged from these in the Documentary History of the State of New York. Alb. 1849. 1:428.
Parker	**Parker, Ely S.** Remarks at the re-interment of Red Jacket. Smithsonian Rep't for 1885. Wash. 1886.
Penhallow	**Penhallow, Samuel.** The History of the Wars of New England with the Eastern Indians, etc. by Samuel Penhallow, esq. Bost. 1726. New Hampshire Hist. Soc. Collections for 1824. Concord 1824.
Relation	**Relations** des Jésuites. Quebec 1858
Schoolcraft	**Schoolcraft, Henry R.** Notes on the Iroquois. N. Y. 1846.
Smith	**Smith, William.** History of New York from the First Discovery to the Year MDCCXXXII, etc. Alb. 1814.
Stone	**Stone, William L.** Life of Joseph Brant—Thayendanegea. N. Y. 1838.
Stone. Johnson	——— The Life and Times of Sir William Johnson, Bart. Alb. 1865.
Thomas	**Thomas, Cyrus.** Burial Mounds of the Northern Sections of the United States. U. S.—Ethnology, Bureau of. 5th Rep't. Wash. 1887.

Thomas. Explorations	——— Report on the Mound Explorations of the Bureau of Ethnology. U. S.—Ethnology, Bureau of. 12th An. Rep't. Wash. 1849.
Van Epps	**Van Epps, Percy M.** The Mutilation of Archaeologic Finds. American Antiquarian, p. 110. Chicago 1894.
Van Epps. Letters	——— Letters to Rev. Dr Beauchamp.
Watson	**Watson, Elkanah.** Men and Times of the Revolution, etc. N. Y. 1856.
Wilkinson	**Wilkinson, J. B.** Annals of Binghamton. N. Y. 1840.
Wilson	**Wilson, James Grant.** Arent Van Curler and his Journal of 1634-35. American Historical Ass'n. An. Rep't for 1895. Wash. 1896.
Williams	**Williams, Roger.** Key into the Language of America; ed. by J. H. Trumbull. Narragansett Club. Pub. 1866-74. v. 1.
Wood	**Wood, William.** New England Prospect. Published in 1634. Bost. 1865. Prince Soc. Pub.
Wyman	**Wyman, Walter C.** Account of Collection, Chicago *Evening Post*, Oct. 8, 1898. Letters to Rev. Dr Beauchamp.

METALLIC ORNAMENTS OF NEW YORK INDIANS

As there were national and provincial costumes in the countries of Europe, so were there differing fashions of dress and ornaments among the aborigines of New York and of the United States. In the heat of summer the simplest possible costume prevailed, except on festive occasions, and many had scant clothing in the winter season. On the other hand, the feather or fur dresses, or those of tanned or woven goods, have been described in picturesque terms. Without recounting these, it seems proper to give some idea how the New York Indians were arrayed when the white man came, and for some time after.

Henry Hudson said that the natives about New York bay wore various skins, and had ornaments of copper, but later writers were more elaborate in description. In the battle on Lake Champlai in 1609, the French leader was told that the three Mohawks “ bore three lofty plumes were the Chiefs, and that there were bu these three and they were to be recognized by those plumes, which were considerably larger than those of their companions. . . They were provided with arrow-proof armor, woven of cotton thread and wood.” Arent Van Curler mentioned similar Mohawk armor in his journal, Dec. 23, 1634. He saw a sham fight in a Mohawk town, nine men on one side and 11 on the other. “Some of them wore armor and helmets that they make themselves of thin reeds and strings so well that no arrow or axe can pass through to wound them.” *Wilson*, p. 91

In the *Journal of New Netherland*, written from 1641 to 1646, it is said that the Indians “go almost naked except a lap . . . and on the shoulders a deer-skin or mantle, a fathom square of woven Turkey feathers or peltries sewed together, they make use now greatly of Duffels, Cloth Blue or Red, in consequence of the frequent visits of the Christians. In winter they make shoes of Deer Skins, manufactured after their fashion.” *O'Callaghan*, 4:4

In his *Description of New Netherland* (1671) Arnoldus Montanus is quite elaborate, but had most of his account from the earlier one of Van der Donck. He said:

> The clothing of the *New Netherlanders* is most sumptuous. The women ornament themselves more than the men. And although the winters are very severe, they go naked until their thirteenth year; the lower parts of the girls' bodies only are covered. All wear around the waist a girdle made of the fin of the whale or of seawant. The men wear between the legs a lap of duffels cloth, or leather, half an ell broad and nine quarters long; so that a square piece behind hangs over the buttocks and in front over the belly. The women wear a petticoat down midway the leg, very richly ornamented with seawant, so that the garment sometimes costs three hundred guilders. They also wrap the naked body in a deer's skin, the tips of which swing with thin points. A long robe fastened on the right shoulder with a knot, at the waist by a girdle, serves the men and women for an upper ornament, and by night for a bed cover. Both go, for the most part, bareheaded. The women bind their hair behind in a plait, over which they draw a square cap thickly interwoven with seawant. They decorate the ornaments for the forehead with the same stuff. Around the neck and arms they wear bracelets of seawant, and some around the waist. Shoes and stockings were made of Elk hides before the *Hollanders* settled here. Others made shoes even of straw. But since some time they prefer Dutch shoes and stockings. *O'Callaghan*, 4:125

In the *Remonstrance of New Netherland*, 1649, we are told that, beside a piece of duffels, deerskin or elk hide,

> Some have a bearskin of which they make doublets; others again, coats of the skins of racoons, wild cats, wolves, dogs, fishers, squirrels, beavers and the like; and they even have made themselves some of turkey's feathers; now they make use for the most part of duffels cloth which they obtain in trade from the Christians; they make their stockings and shoes of deerskins or elk hides, some even have shoes of corn husks whereof they also make sacks. . . They twine both white and black wampum around their heads; formerly they were not wont to cover these, but now they are beginning to wear bonnets or caps which they purchase from the Christians; they wear Wampum in the ears, around the neck and around the waist, and thus in their way are mighty fine. They have also long deers-hair which is dyed red, whereof they make ringlets to encircle the head; and other fine hair of the same color, which hangs around the neck in braids, whereof they are very vain. *O'Callaghan*, 1:281

The Dutch accounts are mainly of the Algonquin tribes toward the sea. In the interior ornaments at first differed. The Iroquois had very few shell beads, but sometimes used perforated fresh-water shells and beads of colored sticks. Sweet grass was tastefully woven, and colored porcupine quills, moose and deer hair were used in embroidery. There were a few bone ornaments, and many of perforated wood. Feathers were everywhere worn, and in a tasteful way. Skins were used with or without the fur, in the latter case being finely finished and adorned.

Father Bruyas gave the names of a few Mohawk ornaments used in the latter part of the 17th century. *Asara* was a necklace or belt, used also for ornaments put around the forehead. *Garensa* was a string of glass beads. *Gentare*, to put red hair about the neck. *Ennitiagon*, to put any ornament there. *Osa* was a robe, and *Tsiosat tsonnito,* a robe made of six beaver skins. *Atouannha* was a bracelet; for these they always wore, but it is significant that no word is given for brooches. *Onnigensa* describes the hair of women hanging down behind, it being the custom to braid it. *Gannonsen*, to mark on the body with the point of a needle, is the only allusion to tattooing, though this was frequently done. *Gasire* was a covering with long hair, called Iroquois stuff. *Garisk* was a stocking, and *Garisk onwe* mittens. There are also names for shoes, socks, blankets, caps and suspenders.

Curler (Corlaer) recorded a few words of this nature in 1635. *Assire* or *Oggaha* was cloth; *Endathatste*, a looking-glass; *Tiggeretait*, combs; *Dedaiawitha*, shirts; and he obtained other names for beads, wampum, caps, stockings and shoes. They had already European articles in constant use.

While there were early notices of copper ornaments along the Atlantic coast, Hudson was the only one to mention them as occurring within the limits of New York. Native copper implements have often been found in the interior of the State, but early metallic ornaments are there very rare, comprising only small beads. After early trade or colonization commenced, all was quickly changed. Copper and brass arrows replaced those of flint, and steel knives those of stone. Brass kettles were lighter and stronger than those of stone and clay, and soon took their place. European beads came into request, particularly the large and artistic ones of Venice, globular or elliptic. Very long glass bugle beads were also much used, and the Jesuits brought rings and medals in abundance. Metallic bangles long disputed the field with the teeth of the bear and the elk, winning the day fully only when these animals vanished from the land. With the development of the wampum trade by the Dutch, in exchange for the prized beaver furs, shell beads and larger ornaments abounded in every Iroquois village. When the red pipestone came, a little over two centuries ago, the sphere of native ornament became greatly enlarged. Till near the close of the 17th century brass and copper delighted the Indian's soul. Then came silver ornaments, holding sway for nearly two centuries more. In the last half of the 19th century these gradually gave place to the cheap jewelry of the day, and New York Indian ornaments, as such, almost ceased to exist.

In the nature of things, we have but a confused idea of how an early Indian appeared when arrayed in all his bravery. The pictures which illustrate the first histories and descriptions were made in Europe, and are the artist's conceptions of things he never saw. A few seem to have been made under the supervision of the respective writers, but even these are far from accurate. Champlain's picture of the siege of the Oneida fort is a familiar instance. The illustrations of Capt. John Smith's various accounts have the same character. In all there is a groundwork of truth, but in all the details are affected by distance and the defects of memory, and still more by the taste or imagination of the artist.

This may possibly be otherwise where verbal descriptions are given, but allowances must be made even then. Usually men described what they saw in a general way, but we must remember that many described what they had not seen, using the accounts of others. There can be no question that this was often done without the slightest intimation that the matter was not original. Bearing this in mind, a few word pictures of personal appearance may be given, some of them outside this State.

In Wood's *New England Prospect* we are told that "a Sagamore with a Humberd in his eare for a pendant, a black hawk on his *occiput* for his plume, Mowhackees for his gold chaine, a good store of Wampompeage begirting his loynes, his bow in his hand, his quiver at his back, with six naked *Indian* spatterlashes at his heels for his guard, thinkes himselfe little inferior to the great *Cham;* he will not stick to say he is all one with King *Charles.*" *Wood,* p. 74. Of the Indians in general, in 1634, he adds to this account that "although they be thus poore, yet is there in them the sparkes of naturall pride, which appeares in their longing desire after many kinds of ornaments, wearing pendants in their eares, as formes of birds, beasts and fishes carved out of bone, shels and stone, with long bracelets of their curious wampompeag and mowhackees, which they put about their necks and loynes." At that time the women wore coats of turkey feathers. He said also: "In the winter time the more aged of them weare leather drawers, in forme like Irish trouses, fastened under their girdle with buttons." For more comfort, "many of them weare skinnes about them in forme of an Irish mantle, and of these some be Beares skinnes, Mooses skinnes, and Beaver skinnes sewed together, other skinnes, and Rackoone skinnes; most of them in winter having his deepe furr'd Cat skinne, like a long large muffe, which he shifts to that arme which lieth most exposed to the winde." *Wood,* p. 73

This will suffice for the clothing and general ornaments of the New York Indians toward the ocean, who were of the same family as those of New England, and whose apparel would be much the same. A few words may be said of the Iroquois in the interior, whose early opportunities of obtaining shell and metallic ornaments were few indeed.

While most of the Huron-Iroquois went much of the time nearly naked, they did not in the least object to fine robes and ornaments for festive occasions. Champlain described the Huron women as wearing a petticoat, and often heavy strings of beads. Beaver robes were common. The Jesuits said that men and women went bareheaded, and a headdress was used only as an ornament. Their robes were the hides of elk, bear and other animals, and the women painted these, drawing lines from the top about two inches apart. They thought most of the skin of a small black animal, as large as a rabbit and with soft fur. About 60 of these were required for a square robe. The tails hung down, making fringes, and the heads formed borders above. *Relation,* 1634

The ordinary shirt or tunic was made of two dressed deerskins, quite thin, fastened on the shoulders and reaching midway on the leg. Fringes were cut in this at the armholes and around the bottom. Coverings for the arms were sometimes added, secured about by cords before and behind. Claws, hoofs and teeth were occasional ornaments, but metallic ornaments soon replaced these. Dyed hair was freely used, and feathers and porcupine quills were often in request. In early warfare the head of some animal was often placed on the warrior's shoulder or head. Painting was customary both in peace and war, and tattooing was frequent. The former still continues among the New York Iroquois.

As this paper deals mainly with the metallic ornaments used by the Indians of New York, which are but rarely prehistoric, the foregoing will suffice to show the general attire of these nations at and about the advent of the white man. After that time changes came rapidly. Those who would follow up the subject in a broader way can not do better than to consult the *Dress and Ornaments of Certain American Indians* by Lucien Carr. This treats of the attire of the Indians of the United States east of the Mississippi, as described by early chroniclers. Of the changes of the last two centuries little is said, nor of some which came 50 years earlier. His admirable summary, with its accurate notes, is valuable and convenient for this early view, but hardly touches the subject now to be considered.

In a previous paper, some references have been made to the reports of copper articles seen by early navigators. Verazzano saw Indians wearing plates of wrought copper as he sailed along the Atlantic coast. These they valued highly. Farther northeast, the savages had copper ornaments in their ears. De Soto saw small copper hatchets in Georgia, and heard of a supply of this metal farther north. The Montreal Indians told Cartier of copper in 1535.

Gosnold met with it on the Massachusetts coast in 1602, and one of his associates has left us quite an account. Brereton said that the Indians " have also great store of copper, some very red, and some of a pale color: none of them but have chains, earrings or collars of this metal; they head some of their arrows herewith, much like our broad arrowheads, very workmanly done. Their chains are many hollow pieces connected together, each piece of the bigness of one of our reeds, a finger in length, ten or twelve of them together on a string, which they wear about their necks; their collars they wear about their bodies like bandeliers a handful broad, all hollow pieces like the other, but somewhat shorter, four hundred pieces in a collar, very fine and even set together. Besides these they have large drinking cups made like skulls, and other thin blades of copper very much like our boar spear blades." *Brereton*, ser. 3, 8:91

Another in the same company tells of " tobacco pipes steeled with copper," and of a savage who had " hanging about his neck a plate of rich copper, in length a foot, in breadth half a foot for a breastplate, the ears of all the rest had pendants of copper."

It can hardly be doubted that this was European metal, the pale copper approaching brass or bronze, though Brereton understood from the signs of an Indian that they dug it on the mainland. The same kind of arrowhead is yet found on recent Iroquois sites. The hollow cylinders of metal had reached the Mohawk valley certainly as early as 1600. The belts with their short tubes still occur in recent Iroquois graves, " very fine and evenly set together." All these will be illustrated from various collections, and their identity can be shown by comparison with the famous relics at Fall River.

The " tobacco pipes steeled with copper " present the same difficulty that is met with in those described by Hudson in New York bay. If both descriptions are allowed, they must also have had the same origin as the arrowheads and tubes. In this connection it may be suggested, as is probably true, that Roger Williams's famous statement that the Narragansetts " have an excellent Art to cast our Pewter and Brasse into very neate and artificiall Pipes," had some slight early ground. Brass and pewter pipes occur on Indian sites in New York, but there is little reason to think them made by the red man. Such pipes Williams probably saw among the Rhode Island Indians. They could cast pewter and lead, and he too quickly determined that all were made by them. The copper used along the Atlantic coast at the beginning of colonization is now generally conceded to be European, with some rude articles of native metal here and there. The mouth of the St Lawrence was so long haunted by European fishermen that many things may have found their way southward along the coast through aboriginal trade, but it is equally probable that some adventurer pushed his vessel along the shore, without recording his trip.

The writer's general conclusion is that native copper articles were not in use in New York as late as the year 1600, but that European articles of brass or copper were used along the seashore, and had even reached the interior by that time.

One article from the Mohawk valley, not represented here, is a stone mold for casting lead or pewter ornaments. It is a flat piece of stone in which three circles have been neatly cut, each with several deeper depressions, to form bosses on the rings. The diameter is about that of a common cent, and there are sloping grooves to carry off the superfluous metal, or to run the metal into the mold, that being covered.

Native copper ornaments

While implements of native copper have been found in New York, ornaments are very rare and mostly confined to beads. A very few are undetermined, but several forms found elsewhere are unreported here. On the other hand, no state has yielded more recent metallic ornaments, and the use of some peculiar forms yet continues. There is little that is certain as to the date of these earlier articles, but most of them may be allowed quite a respectable antiquity. The recent ones can often be dated within a score of years, being found on sites whose age and time of duration are known.

The native copper beads of New York are either small spheres or hollow cylinders, and of these the first seem most numerous.

Mr S. L. Frey gave an account of some he found in a grave near Palatine Bridge in 1879. In this grave were stone tubes. He said:

> Near the tubes, and also embedded in the hematite, I found what had apparently been a necklace or headdress, composed of copper and shell beads; the former were badly oxidized, and had been made of thin sheets of copper rolled into tubes. That they had been worn around the head or neck was evident, for one side of the skull and the lower jaw were stained a dark copper color. . . On the same level as the last grave and about 6 feet to the west of it, I came to another, similar in all respects, lined with flat stones . . . The relics found were the remains of a necklace of shell beads, little copper tubes and small seashells. *Frey*, p. 642–43

Mr Frey kindly furnished fig. 369, showing two of these beads, adding this note:

> The copper beads found in the tube graves are very small, made of rolled metal, and so much oxidized as to make it difficult to determine their original size. I, however, send the best sketch I can. They appear to have been from a quarter of an inch to 1½ inches long, and perhaps ⅛ inch in diameter.

The question of comparative antiquity is suggested by the varying character of these graves, but that most of them were of quite an early age, no one will doubt. In form the beads are precisely like those of historic times and made in the same way. Researches in Ohio have demonstrated the early use of native copper beaten into thin sheets, preparatory to use in other forms, so that this presents no difficulty.

Fig. 239 is a similar bead found by the writer by the Seneca river, in 1878, in the same field where a fine native copper spear was obtained. In section it is more nearly square than circular, and is much corroded. Small ornaments of this kind would rarely be long preserved except under favoring circumstances, and are thus naturally rare. In graves or on village sites only would they last long. This will account for the brief treatment native copper here receives.

There was a later use farther west. Alexander Henry saw native copper at the mouth of the Ontonagon river in 1765, and said that the Indians " were used to manufacture this metal into spoons and bracelets for themselves. In the perfect state in which they found it, it required nothing but to beat it into shape." *Henry,* p. 187

Mr P. M. Van Epps described in the *American Antiquarian* for 1894 a cemetery north of Schenectady, in which a copper ax was found. In another grave afterward, 135 copper beads were obtained. In a letter to the writer describing these, he said:

> The copper beads were quite peculiar, being quite unlike the common tubular beads of the western states. These were made by rolling together quite thick chunks or welts of the native copper, till the finished bead was, in some cases, as large as a small hickory nut. The bar or strip of copper used was, for some of the beads, so thick that two or three turns made a large bead. Mr Clute, the finder of the beads, told me that he gave two of the larger ones to friends, mechanics in the Schenectady Locomotive Works, who desired to pound them into finger rings, but found, to their surprise, that not a file in the works would cut them, and that they had to be annealed before they could be worked out as they wished. In short, that they were tempered or hardened. I can not vouch for this. At any rate, the beads are a unique lot, and it is very unfortunate that the finder allowed them to be separated.

These were found about 1890. The writer, himself, has seen a bit of native copper from Brewerton which rang like steel. Fig. 236 and 237 represent two of these beads still belonging to Mr Clute. Fig. 238 is a smaller one now owned by Mr Van Epps. They are very well worked, and the junction outside is not at first apparent. The surface is neatly rounded, and the ends flattened. These are some of the smaller beads. The larger ones could not be obtained.

Recent beads

The earlier brass beads show European contact preceding colonization. Fig. 245 is a fine cylindric bead of this material, well made and over 3 inches long. This came from the early fort on Garoga creek in Ephratah, and was found by Mr S. L. Frey. Fig. 256 is another from the same fort, which is less than half as long. Out of hundreds of relics found there these are all that came from the white man's hands. It is reasonable to suppose that the Mohawks who used these, had them before they left Canada. This is in the Richmond collection. Fig. 234 shows another in the same collection from the early Cayadutta fort, south of Johnstown. This is nearly 7 inches long, straight and cylindric, and is the only European article yet reported from that site. Had these forts been near the Mohawk river, there might have been a possibility that these beads were lost by wayfarers. Their positions are too remote and difficult for this; and, as their date is just before the great influx of European articles, they may be connected with Cartier's visit to Montreal, or with traders who soon followed. [After the above was in print the writer examined a tubular bead of European copper, found on an early village site in Jefferson county in 1903. This and a fragment of pottery definitely placed this village in the latter part of the 16th century. The bead retains its smooth surface and is 1½ inches long.]

A few later examples of the same class of ornaments may be given. Fig. 243 is a fine cylindric brass bead, found by Mr Frey on the site of the early Mohawk town of *Tionontoguen*. This is 3¼ inches long. From another site he has a similar larger one, 11½ inches long and nearly half an inch in diameter. Fig. 244 is longer than the last figured, and slightly tapering, as though it might once have been the stem of a brass pipe. It is 3⅞ inches long, and was found within the stockade in Chase's woods, on the south line of Pompey. Fig. 254 is an unusually slender brass bead, found at Indian hill in Pompey. This gives it an age of nearly 250 years. It is about 2⅛ inches long and is well made. Fig. 255 is from the fort near Pompey Center, a little earlier than the last and a few miles farther south. It is ruder than most others. Fig. 257 is from the same fort, and is very neatly finished and in fine preservation. It is less than an inch long. Fig. 249 shows four small beads of polished brass, also from this site and of fine workmanship. The brass is neatly cut at the edges and symmetrically rolled. Three of them are much smaller at the ends than in the center, differing from most that the writer has seen.

While many of these beads retain their first use, no small portion were worked up from broken kettles, as other ornaments were. Fig. 248 is probably not of this character. It is a neat and cylindric coil of narrow brass or copper, forming a close but elastic tube, 3¾ inches long and over ⅜ inch in diameter. It was taken from a grave on the edge of Canajoharie village. With it were iron tools and an R. Tippet pipe.

Fig. 246 is in the Hildburgh collection and was obtained at a recent Oneida site near the lake. It is a slender cylindric coil of thin brass, 3 inches long, and retaining the cord on which it was strung. Fig. 247 the writer picked up on a recent Cayuga site. It is slightly curved, perhaps by use, and is smaller and ruder than the last. Such forms have been abundant and were easily made.

Fig. 261 has a slight resemblance to the last, but is unique, so far as known. A slender wire was doubled and neatly twisted, making a slender link about 2¼ inches long. Several of these united in a chain made a graceful necklace. This came from the Smith farm, west of Fort Plain.

Fig. 250 to 253 are from a unique lot of slender silver beads, most of which now belong to the writer. They vary somewhat in length and thickness, some being no thicker than the common knitting needle of old times. Fig. 253 is the longest and thickest of this lot, being 2¼ inches long. They are plain or slightly ornamented. These came from the Onondaga reservation. Fig. 197 is taken from Morgan's figure of shorter but similar beads. In the latter figure the slender silver tubes were divided by globular glass beads, but this practice did not prevail among the Onondagas.

Three illustrations are given of small and spherical brass or copper beads, all of which are recent. Fig. 240 shows those which are quite small. These came from Boughton hill in Victor, and they are of the 17th century. They are now in the Buffalo collection, and are but little larger than a large pin's head. Fig. 241 shows five out of a lot of 10 beads in the Hildburgh collection. These are much larger, and came from Ontario county. They may be given the same date, as silver took the place of copper and brass about the beginning of the 18th century. Among the poorer Indians they may have continued longer. Fig. 242 shows some beads from the Onaghee site, on the McClure farm in Hopewell. They are a little smaller than the last but of the same character. These also are at Buffalo.

Fig. 235 is a unique article, differing from a cylindric bead and yet suggestive of one. It was found at Indian castle in Pompey, a site occupied in 1677 and for some time earlier. It is a long and slender silver tube, having rows of small perforations at one end. This suggests its use by the medicine men in blowing the medicinal water on the patient. It is moderately curved and is seven inches long, but is quite likely not to have been a mere ornament. If it had that character, something might have been attached by using the holes. One small elliptic lead bead came from the Onondaga fort of 1696.

Pendants or bangles

A favorite ornament for the past three centuries is a conical roll of sheet metal, attached to various parts of the dress. Collectively they may form fringes, and their tinkle adds to the music of the dance. They often have colored hair, or other adornments, drawn in so as to form tassels. The copper has often preserved these frail materials for over two centuries. They are usually of moderate size, but Mr Hildburgh has one from Oneida Valley about 5½ inches long. Mr Schoolcraft figured a cluster of three from Onondaga county, presumably from the site of 1696. He said they were "three fourths of an inch in length, bell-shaped, and composed of native copper, beat very thin." *Schoolcraft*, p. 143. At a later day his judgment would have been different. They are found on most recent Iroquois sites, but the later Indians have used other metals. The writer recalls none of native copper.

Fig. 262 is of brass and of unusual size. The writer found this on Indian hill, Pompey, many years ago, and the smaller ones were then frequent there, as well as shreds of sheet brass and copper. Fig. 263 is a characteristic example found 2 miles west of Canajoharie. Fig. 260 is one of the common form from Indian hill. Fig. 259 is one from Cayuga, retaining the ornamental hair and part of the cord. They have been common on most recent Iroquois sites, and are frequent in collections. Fig. 258 is a cluster of these belonging to an Onondaga Indian, but these are now made of iron. Lead or zinc may be used instead. One early form of bangles was of deers hoofs, and for this sheeps hoofs may be substituted.

Bells

When the French abandoned the fort at Onondaga lake in 1658, the mission bell was carried to Indian hill, and was there used for a long time. In early days nearly all the fragments of this were found, and also a small bell without a clapper. Mr Clark said that the former "would have weighed probably one hundred and fifty or two hundred pounds. The metal is very fine. . . Time and exposure have not changed it in the least. When found, some twenty years since, it was broken up, and the pieces found were enough to make it nearly entire." *Clark*, 2:276

Mr Clark also says that near the fort of 1696 "numerous little bells, such as are sometimes used by the Romish priesthood," have been found. He reported this from hearsay; but the only bells familiar to the writer from Iroquois sites are those commonly called hawk bells, like the sleigh bells of modern days, but lighter. These are frequent, and were probably attached to the dress when dancing. They are usually of brass, and are sometimes nearly perfect. Mr W. L. Hildburgh has two of silver from Ontario county, the only ones yet reported. They are as large as his brass bells, and larger than some. Fig. 267 shows one of these. They are sometimes quite small, as in two of his brass ones from the same county. Fig. 266 shows half of a large one from Pompey. Fig. 264 is a fine one from the fort near Pompey Center, and this seems the oldest yet reported. When some from that town were exhibited, a local paper said, "These bells belong to a period 3000 years ago." Fig. 265 is a smaller size from Fleming, where they are often found.

The Moravian missionary, Heckewelder, spoke of this feature of Indian dress in the 18th century. The women have "a number of little bells and brass thimbles fixed round their ankles, which when they walk, make a tinkling noise, which is heard at some distance; this is intended to draw the attention of those who pass by, that they may look at and admire them." *Heckewelder*, p. 205. At the burial of a Delaware woman of rank, on the upper borders of moccasins "were fastened a number of small round silver bells, of about the size of a musket ball." *Heckewelder*, p. 271

He elsewhere refers to the "thimbles and little brass rattles on their ankles." In the summer of 1901 the writer saw some of these thimbles in Fleming, taken from a Cayuga grave. They were simply perforated at the end for suspension, and must have admirably answered Indian purposes.

Men had plainer ornaments for a similar use, but the bells and thimbles were for the women, who were expected to be better dressed. Sometimes bits of brass were perforated and strung on the moccasins or other parts of attire, to produce a tinkling sound. These might please the ear in the dance, but it hardly seems probable they were intended to draw attention to the wearer at other times. Such ornaments were not peculiar to America.

Fig. 375 shows one of two pewter hawk bells found in Pompey, which could have produced but a dull sound. They are of small size and are now much flattened. The writer has seen no other bells of this metal.

Bracelets

Bracelets of native copper occur in various parts of the country, but there are none of which the writer feels certain in New York. These early ornaments were simple rings, usually thick, and sometimes with the ends so firmly in contact as to show they were not intended to be removed. Some of this kind were found in the great Smith mound in Kanawha county, West Virginia. They were elliptic and heavy, the ends abutting, and measured across 2¾ by 2¼ inches. There were six on each wrist of a skeleton. In the same mound was a copper quadrangular gorget with indented sides and two perforations. The length was 3½ inches by 3¾ wide. These gorgets also do not occur in New York. Some have been found in Wisconsin.

In a mound in Crawford county, Wis., was an instance of intrusive burial, with many recent relics. Among these were three copper bracelets, 10 silver ones fluted, like those in use here, a copper kettle, silver locket, silver earrings, six circular silver brooches, a copper finger ring, and a double silver cross, 5¼ by 2⅝ inches. *Thomas.* Explorations, p. 51

In the *Relation* of 1658 it is noted that the Indians not only wear bracelets on the wrist, but above the elbow and ankle, and on the leg. These uses partially appear in the account of Capt. David's dress, elsewhere given. In Romney's picture of Brant the broad and simple silver band above the elbow is conspicuous and tasteful.

A few copper bracelets in New York are much like early forms, but they also suggest nose rings. Others are made of copper wire, neatly bent into the desired form. Last come the flat silver bracelets, with holes for attachment at the ends. Many of these were made by Indian silversmiths, but the writer has seen one more elaborate pair with the name of an Albany silversmith, and one of the Wisconsin mound bracelets had on it the name of Montreal, and another the letters A. B. The silver bracelets sold at an early day by the French and English at Niagara and Oswego, are mentioned elsewhere. The Seminoles of Florida still wear silver wristlets and headbands, and make ornaments from coins.

From the site of the Onondaga fort of 1696, Mr Clark reported "bracelets for the wrists 3 inches broad, of brass highly wrought." *Clark*, 2:281. Silver was little in use then, but the writer has seen no brass bracelets anywhere which would agree with this description. They are either quite narrow or else made of copper wire, bent back and forth so as to form a broad surface. Even then they have no great width. He may possibly have referred to the long diameter, as it encircled the wrist.

Fig. 305 is a copper wire bracelet from Fleming, which is a good example of this broad form. From its size, it must have been worn by a young person or woman. Fig. 309 is of the same character and from the same place. This includes a sectional view. Fig. 307 is a narrower one from Indian hill, Pompey, which is formed like the preceding.

Fig. 308 may be either bracelet or nose ring, but it is hardly likely the Indians would have used copper for the latter. It is a single length of heavy wire, neatly rounded at the ends, and came from the last named site. Fig. 382 is of the same character and from the same place. Fig. 310 is much like this, but the ends expand. This is from an Oneida site at Munnsville. Fig. 306 is a fine example, somewhat flattened in the center and pointed at the ends, looked at horizontally, but with uniform breadth and rounded points when viewed the other way. It is grooved within and without, describes a true circle, and came from Cattaraugus.

Two narrow brass bracelets have one edge serrated wholly or partially. Fig. 370 is one of these from Fort Bull, near Rome N. Y. The ends are shown within the figure. The serration is complete in this. The other is from Geneva N. Y., where Mr George S. Conover had several of this kind. Fig. 371 shows this. The localities place them in the middle of the 18th century.

Fig. 372 is a small, narrow bracelet of fluted silver. Fig. 373 is of the same material, but is larger and has a series of circular figures stamped on it. Both are from Geneseo and are in the Buffalo collection. They belong to the latter half of the 18th century.

Fig. 365 is a thin and broad bracelet of corrugated silver, obtained by the writer on the Onondaga reservation. It is quite elastic, and there are two holes at each end for the insertion of strings for tying it. There are several narrower examples of this form in the State Museum, which do not differ materially from this.

Loskiel observed that " both men and women are fond of silver bracelets."

The armlet was of a similar character, and therefore requires no illustration here. It was broader, and worn just above the elbow. In Romney's picture of Brant this is conspicuous and very wide. They are not in use in New York now, but were often mentioned by early writers. One white man who was taken prisoner and adopted in 1763, was arrayed in Indian costume, and had both his arms " decorated with large bands of silver above the elbow, besides several smaller ones on the wrists." *Henry*, p. 110

These armlets were still in use less than 50 years ago, but not commonly, and they have long since disappeared. The writer has seen thicker bracelets of silver, made by an Albany silversmith, but regrets that he has neither example nor drawing of these. Except in material they were much like those used by our own people.

Fig. 405 to 410 are of silver bracelets in the State Museum, all of which were collected by Mrs Converse. All are fluted, and fig.

405 has notches along one edge, and some good tracery. Fig. 410 is much like this, but the fluting and tracery are somewhat different. The former has the central lines in scallops, but in the latter they cross. Fig. 406 to 409 have no tracery, but are simply fluted. According to the writer's notes, the figures are rather deep for the size. With the depth of little more than ⅝ of an inch, they should be about 2½ inches across, but this is of no special importance. The form and style are well represented.

Brass tubes in leather belts

Brereton's account (1602) of the belts and collars, used by the New England Indians and made of hollow copper cylinders arranged side by side has already been quoted. That these were of European metal is now almost certain, though he thought them native. The arrows described are like those on recent New York sites. The copper plates, so called, are like others of brass elsewhere. The arrangement of tubes to form an ornamental belt is one familiar in western New York. The skeleton found at Fall River Mass. had similar articles, one being a brass plate 13 inches long, arrows precisely like those of the Iroquois in the 17th century, and a belt of brass tubes, each 4½ inches long, which was the width of the belt. These were not arranged on leather, as in New York, but on pieces of sinew, being much longer than our tubes.

Capt. John G. Bourke described a similar ornament of tubes, apparently not arranged as a belt:

> In an ancient grave excavated not far from Salem, Massachusetts, in 1873, were found five skeletons, one of which was supposed to be that of the chief Nanephasemet, who was killed in 1605 or 1606. He was the king of Namkeak. On the breast of this skeleton were discovered several small copper tubes . . . from 4 to 8 inches in length, and from one eighth to one fourth of an inch in diameter, made of copper rolled up, with the edges lapped. *Bourke*, p. 494

In a grave in Caldwell county, N. C., were similar articles, but they seem to have been strung as pendants for the ears. There were five copper cylinders, 1¼ to 4¼ inches long, and from a quarter to half an inch in diameter, strung on leather. They were made of thin strips of metal, rolled so that the edges met in a straight joint.

Besides this there was a bracelet of similar smaller tubes, alternating with shell beads of modern form, and four iron implements. This determines the general age of some engraved shell gorgets found in this grave, which are more elaborate than those of New York. *Thomas,* p. 337

Some copper cylinders in the Toronto collection have a general resemblance to these recent forms, and suggest a similar use, but, while the arrangement is parallel, about the diameter of the beads apart, they are differently attached. Mr Boyle said:

> This cut represents nine cylindrical copper beads just as they were found in the Tremont Park mound, Tidd's Island. They were lying on a piece of the original hide or leather to which they had been attached, and I was careful not to disturb them. They are made of beaten or leaf copper rolled into their present shape. In length they are from $\frac{3}{4}$ of an inch to an inch, and vary from $\frac{3}{16}$ to $\frac{5}{16}$ of an inch in diameter. The fine thongs by which they were sewn to the hide are still adherent to the underside. *Boyle,* 1888, p. 49

Some examples of leather belts, adorned with brass tubes, have come before the writer, and, while the number of rows may vary, the same plan was followed in all New York specimens. Parallel and vertical cuts were made in the leather, in regular lines along the belt, and each division was wound with a thin piece of brass, giving a pleasing effect. Several rows of these copper or brass tubes thus encompassed the body.

Articles of this kind would not be easily lost, or if so, easily preserved, and they can be expected only in the graves of those able to afford such ornaments. Apparently they were far from common, and but two have met the writer's eye. Fig. 276 shows one of several fragments of one of these belts, taken from a Cayuga grave near Fleming. The brass tubes in this are of considerable size, being both longer and wider than in the other example. In its fragmentary condition there is no present indication of its width, except that the broadest part of the leather may be supposed to approach one margin. To the three remaining rows of tubes not more than one could reasonably be added.

Fig. 277 is a broader fragment, which has more rows of smaller tubes. There are five of these, probably all those belonging to the belt. The broad line of leather on the upper side may be considered the margin, and the narrow fragmentary strip on the lower edge seems to have been outside of the tube arrangement at first, as it is now. This was found by Mr C. F. Moseley, at Honeoye Falls, and thus was used toward the end of the 17th century. That century, among the Iroquois, might well be termed the age of bronze.

Small images

When the red pipestone reached New York, about the end of the 17th century, it was found available for ornaments of all kinds. Shells also were more freely used, and both aided in displacing some metallic animal figures which had been made and used to a moderate extent. Fig. 269 is one of the oldest of these, and came from Indian hill, Pompey. It represents a flying squirrel, and is made of pewter or lead. These figures have no provision for suspension, and may have been used either for a toy or charm.

Fig. 268 is a small pewter human figure which lacks the arms. It is from Indian castle, Pompey, and of about the same date as the last. It is probable such figures were at one time abundant, but, when finer ornaments appeared, these were melted for bullets. These rude forms were easily designed and cast, and may be considered purely Indian work, possibly even that of children.

This can hardly be said of fig. 272, which is a rude turtle made of iron and found on the same site as the last. The casting of iron was beyond the Indian skill, but why a white man should have made so rude a figure, it is not easy to say. Fig. 273 closely resembles this in character, but the material is lead. It came from the same site. Fig. 274 is from a site in Pompey south of the last two, and perhaps a little later in date. It is rude and broken, and seems made of copper, but this has not been determined.

Fig. 270 is a rude bird, made of lead or pewter. This came from the McClure farm in Hopewell. Fig. 271 is a small animal form of the same material, found by C. F. Moseley at Honeoye Falls.

A rude and slender quadruped of lead or pewter came from Pompey, and was evidently cut into shape. The head is broken, but the figure is yet 2¼ inches long. A well wrought horse's leg, of the same material, is from the same place, and is now 2½ inches in length.

A very fine human figure of iron came from the same place. There is an expanded base instead of the lower limbs, and it is nude except for either a serpent or a scarf passing over one shoulder and under the other. It is but little corroded, and may be of a later date than the site. A rude but spirited figure of an ape shows greater marks of age. This is also of iron, and both may have been children's toys. The last four are now in the state collection.

Lead medals or ornaments

Of about the same age as these animal forms is a series of lead ornaments suggestive of medals. In a sense they are rude, but some have well formed letters or numerals stamped or engraved on them. Fig. 230 is an elliptic medal, the loop of which has been broken off. On the side represented is a human figure, holding by the hands to a crossbar. On one side of the figure is a serpent with open mouth. Unfortunately the writer did not draw or take notes of the reverse. It was found on Darwin McClure's farm, Hopewell. Mr J. V. H. Clark described one like this, from the Onondaga fort of 1696, as "a medal of lead, oval-shaped, an inch and a half long. with the figure of a man suspended by his outstretched hands, supposed to be a representation of our Saviour on the cross, and a figure of a serpent. On the opposite side is a figure of a man in a sitting posture, resembling the characteristic position of the native prophets; or, as some interpret it, the devil." *Clark*, 2:280

Fig. 228 is a fine lead medal belonging to C. F. Moseley, and found by him at Honeoye Falls. On the side represented were well formed letters in a circle. Within and without these are several circles, and in the center are indistinct forms. Mr Moseley thought these parts of a building, perhaps a church. The writer could trace certainly only what seemed indistinct crosses. Of the letters, BEN appeared very plainly. This may be part or an abbreviation of Benedictus. Like most of these medals, this is made of a flat piece of lead, bent over so as to be double throughout. Compare this with fig. 374.

Fig. 229 is from Tribes Hill, in the Mohawk valley, and is in the Richmond collection. The figures are in relief, and the edge tastefully wrought. The center is irregularly perforated. Fig. 231 is from Indian hill in Pompey. It has the figures 12 above, and below 46¼ in early characters. On the reverse is a broad loop for attachment.

Fig. 232 is in the writer's possession, and was found at Boughton hill in Victor. It was formed by welding two flat pieces of lead. These have come apart, and the side having H on it forms a flat ring, the inner line of which crosses the H and forms a circle, outside of which is ornamental work. On the reverse 79 appears above a line, and other characters below. There is a long loop for suspension. Fig. 233 was furnished by Mr James Nelson, of Cold Spring N. Y. It was found on an open air workshop, on the farm of Charles De Rham, but probably had no connection with it. It is pyriform in outline, and flat. There are inscribed characters on both sides and ornamental work about the base. Mr Nelson wrote: "It seems to me it might have been made from a musket ball by one of the few Indians that lingered about the coves of the Hudson." There would seem to be too much metal in it for this origin, but an ounce ball would spread over a considerable space.

Several similar medals from Pompey were placed in the writer's hands after the foregoing were described. All either were or had been double, with projections behind for attachment. Two are nearly alike, and may be compared with the one belonging to Mr Moseley. In the best preserved of these is a castle in the center, with several turrets. Fig. 374 is of this. The other shows three small crosses on an elevation below and in front of this. This centerpiece is inclosed by two circles of points, now bent out of shape. Between these, on the left, are the letters CAM; then a crown in the center above, and on the right of this the letters PEN. Fig. 398 shows the other, with the central perforation, the back having disappeared. It has the same letters in the same position, but the crown has been obliterated. Possibly the lettering of Mr Moseley's medal may have been the same.

Another of these Onondaga medals is rude, but is perforated for suspension. The figures 44 are in the center, with $\frac{1}{2}$ on the right of these. Below is the figure 4 with some cross lines. This medal is not large. All these may have been articles thrown away by the whites after using, but picked up and treasured by the Indians.

Mr Frey has a curious and early ornament of this form and material, shown in fig. 387. It is larger than the last two, being $2\frac{1}{2}$ inches in diameter, but has some features in common. In the center seems to be a shield inclosing a large fortified building, flanked by two separate towers. There is an ornamented half circle below these, and a large crown above. The date of 1630 is quite plain. The supporters are rampant animals, perhaps lions, but the heads are much worn. The one on the right shows the lion's mane. In the British arms this is the place for the unicorn. There is no lettering. Like some others, it is made of two plates, one inserted in the center of the other, and flattened to correspond with its outer surface, leaving a projection behind by which it might be attached to a belt or dress. It is much defaced, but the above features are easily seen.

Gorgets

One of the earliest metallic ornaments the Iroquois obtained was a small and perforated disk of brass, thin and saucer-shaped. It may have been used in several ways, but was probably attached to the clothing. The writer has found or seen a number of these. Mr Schoolcraft gave a figure of one of these with a characteristic description: "This article consists of a metal, which is apparently an alloy. It is slightly ovate, and is perforated in the rim, so as to have been hung transversely. Its greatest diameter is $2\frac{4}{10}$ inches. There are no traces of European art about it, unless the apparent alloy be such. Locality, valley of Genesee river." *Schoolcraft*, p. 135. Fig. 227 is from his, which is represented as being flat, but was probably slightly convex.

The finest silver gorget that has come to the writer's notice belongs to Mr Wyman, and came from an Indian grave in Michigan. It is a circular disk, 6¼ inches in diameter, and with the usual tracery on the surface. Two large studs attached it to the garment. Nothing of the kind has been reported in New York, but it is likely that some of the larger ornaments for the breast had this mode of attachment. Silver gorgets were often mentioned in the 18th century, but many forms once in use are now entirely forgotten. Loskiel seems to refer to something like gorgets, where he says that the ornaments "of the men principally consist in the painting of themselves, their head and face principally, shaving and good clean garments, silver arm spangles and breastplates, and a belt or two of wampum hanging to their necks." *Loskiel*, 1:203

Fig. 221 is a small brass ornament of this kind, like a shallow saucer, and with two opposite perforations near the edge for attachment. This was found by the writer on a fort site partly in Wallace's woods, on the north line of Fabius. This was occupied early in the 17th century. Fig. 222 is a similar and larger one from another fort not far away. Both are in good condition.

Fig. 220 is a half circular piece of flat and thin brass, having a perforation near one point. Though its present form is perfect, it was probably circular at first. This came from Pompey Center. A longer one, with two perforations, came from another site in the same town.

Fig. 226 shows a small and thin brass crescent with a central perforation. It was found at Indian castle, Pompey, and suggests an ornament mentioned by Clark from an adjoining site. He said: "Several brass crescents have been found bearing the inscription, '*Roi de France et Dieu.*' These were probably used for nose and ear jewels." *Clark*, 2:262. This has no inscription, and may be smaller than those mentioned.

Fig. 275 is a rectangular brass plate from the Onondaga fort of 1696. There are two perforations near the upper corners, and the lower corners are rounded. Fig. 288 is a rude ornament of flat brass, made at the early day when every fragment of this metal was utilized. It is angular and oblong. One small hole has been completed and a larger one begun. The writer found this with fig. 221. Fig. 290 will illustrate how such fragments were used. It is a strip of brass with three perforations. Fig. 367 is a pentagonal brass plate, and fig. 154 a brass circle, both perforated. These are from Indian hill, Pompey. There are others elsewhere.

Earrings

The earliest metallic earrings in use in New York were probably those of copper wire coiled and flattened. Fragments of these have puzzled some antiquaries. It is possible that some perforated disks and coins may have served the same purpose at an early day, but they are more likely to have been used in some other way. Glass and shell beads were also utilized for earrings, and probably many other things. In the picture of Colonel Pickering's conference at Buffalo, in 1793, all of the Indians wear in their ears large elliptic disks, each containing an engraved cross. *Stone,* 2:342. This form does not appear in any New York collections.

The earliest unmistakable form was of copper wire, bent at an acute angle in the center, and having the ends bent into a flat coil. This done, the wire was hammered down to half its first thickness. They are often broken in the center, and then give no suggestion of their use. In their symmetric form their purpose is evident. They are occasional in Canada, but are probably more frequent on Onondaga sites than elsewhere. The smallest which has met the writer's eye is a fragment from Ontario county, in the Hildburgh collection. They vary much in size.

Heckewelder described another ornament for the head which he observed at an Indian funeral. " Her long plaited hair was confined by broad bands of silver, one band joining to the other, yet not of the same size, but tapering from the head downwards, and running at the lower end to a point." *Heckewelder,* p. 270

Loskiel said: "At feasts, their hair is frequently decorated with silver rings, corals, or wampum, and even with silver buckles. Some wear a bandage round their heads, ornamented with as many silver buckles as it will hold." *Loskiel,* 1:48. He adds, " They also decorate the lappets of their ears with pearls, rings, sparkling stones, feathers, flowers, corals, or silver crosses." *Loskiel,* 1:49

One observation on Indian headdress, by this author, is of interest:

> The Delaware women never plait their hair, but fold and tie it round with a piece of cloth . . . The Iroquois, Shawanose, and Huron women wear a queue, down to their hips, tied round with a piece of cloth, and hung with red ribbands. The rich adorn their heads with a number of silver trinkets of considerable weight. This mode of finery is not so common among the Delawares as the Iroquois, who by studying dress and ornament more than any other Indian nation, are allowed to dictate the fashion to the rest. *Loskiel*, 1:52

In Miss Powell's account of an Iroquois chief in 1785, hereafter to be quoted, she said he had "a pair of immense earrings, which hung below his shoulders." The picture of Joseph Brant in his youth, by Romney, helps us to understand this, his pendants being of the same length. Half of the earring was a chain of large silver rings. From the base of this depended three chains of the same kind. A system of pendants was a favorite feature of this ornament, as will be seen later. Parts of these were easily detached and lost, and when thus separated have been misunderstood. Their Onondaga name is *Ka-wahs'-hah.*

Fig. 169 shows the earliest form of these ornaments known in New York, and was found in the Onondaga fort of 1654, where many have been obtained, both perfect and fragmentary. It is simply a piece of copper wire symmetrically coiled in opposite directions, and forming a loop in the center. This was then hammered down to a moderate degree. Of course there must have been some means of attachment to the ear, unless the opening was very large. Fig. 168 is from a neighboring site, occupied in 1677, and probably earlier. They were extensively distributed, but their use was confined to that century. They are often broken at the loop, and in this condition have perplexed some collectors.

A large proportion of the silver earrings known are later than colonial times, as will be seen in fig. 170, furnished by Mrs Converse, whose fine collection is well known. This has not only the American eagle, but the union shield on the breast. There is provision for a pendant in the loop at the base of the tail.

Fig. 171 also suggests a recent date, having the shield, scroll, eagle's head and stars. This also is imperfect, and came from Pompey. Fig. 173 is almost perfect, and was obtained at Cattaraugus by Dr Evarts. There is an arch above the spread-eagle, and a thistle head forms the pendant. These are national emblems of the United States and Scotland, but there is no reason for giving them any significance here. All that was desired was a pretty design.

Fig. 174 again shows the American eagle in an elaborate way, the stars appearing on the arch overhead. It is much like the last, having a similar boss on the breast, but the pendant is lacking. This was found long ago, at a place called the "Jumps," in the town of Clay, where the Onondagas annually met to renew the marks of the extraordinary leaps of a prisoner.

Fig. 172 is an earring of curious design, obtained by the writer on the Onondaga reservation. The elliptic center is in high relief, and has a lower notched border on each side. It is perfect, and the loop for attachment on the back is much like that of fig. 185, but more slender. This kind of loop belongs to several which follow, and is very nicely made.

Fig. 175 and 176 are much alike, differing in the number of pyriform pendants and the size of the rings. Fig. 176 seems perfect. Both belong to Onondagas, and their form seems rare. Fig. 177 is from the same reservation, and seems a triangular pendant belonging to a large earring.

Fig. 178 is unique. At the top is the half spherical ornament seen in some others, as well as the loop behind. Below this is a columellar appendage with three angular contractions varying the outline. It belongs to an Onondaga woman. Fig. 182 has the half spherical ornament just mentioned, with the usual loop. The writer obtained this pair at Onondaga, as well as fig. 185, which is of the same character but larger.

Fig. 179 is a very fine earring obtained by Mrs Converse. This form is rarely perfect. There are bosses on the lower corners of the large triangle, with a glass setting in the center. Below are three small pendants of a frequent form. Fig. 180 was obtained by the writer at Onondaga. The upper ornament frequently forms a complete article, with or without a glass setting. It has the loop behind this diamond form, and a triangular pendant below. Both these have glass. It will be observed that there are holes for attaching three small pendants below. Fig. 181 has these pendants in place at the base of a similar large triangle, but is incomplete above. This has a glass setting, and belongs to an Onondaga woman. Fig. 184 belongs to the same person, and is elliptic in outline, with notched edges. It is imperfect. Fig. 189 is another of hers, also imperfect. It is pyriform and set with glass, and in general character is much like the upper part of fig. 183 reversed. Fig. 193 is hers also, having a common form of small pendant attached to a thick elliptic ornament by a small ring.

Fig. 183 is another of Mrs Converse's fine earrings, which seems perfect. A pyriform ornament above, with scalloped edges and glass setting, has a triangular pendant below. The top and bottom of the latter are embossed. Fig. 190 is also hers, and is unique in material, being of gold. It is a plain ellipse and of small size, increasing in thickness by successive stages.

Fig. 186 the writer got at Onondaga. It is triangular, with projections and bosses, and plainly incomplete. Fig. 191 he had from the same place. It is of a diamond form, with bosses at the angles, and is perfect. This is a frequent form, alone or in combination. Fig. 192 is similar, but plainer and with more openwork. Several of this frequent form he also obtained there, which were set with glass. Fig. 188 is the triangular base of an Onondaga earring, which has a single boss. Fig. 187 is a very pretty circular earring, set with glass, which an Onondaga woman gave to the Onondaga Historical Association.

One unique pair which the writer got at Onondaga is not figured here. The design is a small padlock, with the key attached outside. There is little probability that this was of Indian make, but most of the foregoing are of Indian manufacture. The article in question is of delicate and beautiful workmanship, but not characteristic, like those shown.

Fig. 200 is taken from one of L. H. Morgan's illustrations. It is a large silver earring, with an eagle above a large triangle. The latter has scalloped edges, and below the base are three small pendants. Some of the Onondagas wear a plain globular eardrop attached to a ring.

In the *Annals of Binghamton* occurs the following passage regarding the triangular pendants, and what is probably the shield part of earrings, though the description is not clear. It concerned the recent Indian occupation of Windsor N. Y.:

> Deacon Stow, who grew up on these plains, mentioned two kinds of trinkets which he had often found, himself. One of a triangular form, about an inch from angle to angle, made of silver, and flat, of the thickness of a 10 cent piece, with a hole near one angle; supposed to have been worn for a pendant at the nose. Another, of silver also, made of a gridiron form, and about the circumference of a half dollar. Supposed to have been worn at the nose. *Wilkinson*, p. 143

Finger rings

Father Bruyas was accustomed to give his Oneida pupils in 1670, if they could repeat on Sunday what he had taught during the week, "pour recompense une corde de rassade, ou deux petits tuyaux de verre ou deux bagues de leton." These common beads, long bugle beads, and brass rings thus became very common, and upward of 30 rings have been taken from a single grave. The glass pipes or bugle beads are still found full 4 inches in length, though usually shorter. The rings in a grave may thus testify to faithful students. On the other hand, the missionary kept partially in view religious instruction. Beads might gratify taste, but might serve a more useful purpose if made into a rosary, with a cross or appropriate medal at the end. The rings almost invariably bore sacred symbols, and may have found place elsewhere than on the fingers. No Indian need buy them if he would be studious for a week.

These early rings are mostly of a rude and cheap character, but many are of good design and finish. Quite rarely one occurs of gold or silver, or even with a setting of small stones. At a later day they were almost entirely of silver, and often of a massive form. Some of these seem to have been made by the native silversmiths. They were found on all reservations, and the art furnished an Indian surname which still survives.

Mr Crisfield Johnson mentions that in 1796 there came to Buffalo Asa Ransom, "a silversmith by trade, who . . . went to work making silver brooches, earrings, and other things in which the soul of the red man and the red man's wife so greatly delighted." This was a profitable trade. In the Richmond collection is a box of tools and patterns for making silver ornaments, obtained from an Indian. Many white persons have seen the work done. Josiah Jacobs, of the Onondaga reservation, told the writer that his uncle *Ju-ne-gant-ha* "The tribe is very large," made brooches out of silver coins on a small anvil. These were hammered out, and then cut out by patterns. Punches and chisels were used, and his greatest difficulty was in setting colored glass in pendants and earrings. Other smiths are known by name to the writer.

In his report in 1852 Mr Morgan says of this:

> The most of the silver ornaments in later years have been made by Indian silversmiths, one of whom may be found in nearly every Indian village. They are either made of brass or silver, or from silver coins pounded out, and then cut into patterns with metallic instruments. The earrings figured in the plate were made out of silver, by an Onondaga silversmith of Grand River, under the direction of the writer. *Morgan. Fabrics etc.* p. 89

In the report of 1850 he said that hatbands, arm and wrist bands, earrings and brooches of silver, were principally of Indian manufacture. For some of these bars and sheets of silver were required.

Three bronze rings were found near finger bones in a bone pit on the Tuscarora reservation, probably a Neutral ossuary. Near these was a recent Canadian penny, probably dropped there in accordance with a local custom. When the Tuscaroras disturb bones or take anything from graves, they leave a small coin as an atonement or fair exchange. *Thomas.* Explorations, p. 513

Most collections made from recent Iroquois sites have these bronze rings, and those represented are selected from the many which have met the writer's eye. One of the most remarkable is perfectly plain, and is in the Hildburgh collection. It is a simple brass or copper cylinder, about $\frac{7}{8}$ of an inch long, and was found in Ontario county. Fig. 366 shows this fine example. Many articles which have a copper hue externally, appear yellow when cut.

The Jesuit rings are usually of brass or bronze, with an elliptic disk or seal, on which are many devices, sometimes almost effaced by use. I. H. S. with a cross above was a favorite; the heart, the letter L, the crucifixion, and sometimes a bust, appear on others. A moderate number will be illustrated. They are not often of large size, being given to young women and children as a rule. In New York none are as early as the middle of the 17th century, and few are as recent as its close. They came and went with the missions.

Cayuga county has been quite rich in these rings, and a moderate number have been figured and placed on record. Fig. 153 is one from a site near Fleming, where many have been found. There is a monogram in which M is the most conspicuous feature. A may be another part, or it may be an inverted V. As the heart above this is inverted, this may be the intention. There would thus be V. M., for Virgin Mary. Beneath the monogram is a flagon or pitcher. Fig. 343 is much like this, having the same monogram, but the fleur-de-lis takes the place of the other figures, and there is an ornamented border. It is larger than the last and came from the same place. There were five of these in one collection.

Fig. 314 has a fine full face and an illegible inscription. It came from the same place, with two others. Fig. 316 is also from Fleming, and shows a full face, with a small cross in the drapery on one side. Fig. 317 was found with the last, and has a bust with mitered head. A small cross appears. Fig. 324 is from the same place, and somewhat corroded. Though there seems to be one large cross and three small ones, it is probable that the correct rendering would be one large cross above I. H. S., as in other cases. The same may be said of fig. 329, which was found with the last, but is much smaller.

Fig. 325 is another of these Fleming rings, having I. H. S. in plain roman letters, surmounted by a cross with expanding limbs. There are three small crosses below, and an ornamental border. Fig. 330 shows another from the same place, the design of which is a large L, including a small heart and surmounted by a crown. This fine ring has an ornamental border. Fig. 334 is smaller, and has the L but not the other emblems. This is from Fleming, as well as the next. Fig. 338 represents the crucifixion, with a bleeding heart on each side.

The following three are from the same place. Fig. 354 has a crown above and a star below. The intervening figure shows clasped hands. There were two of these, showing a neat border. Fig. 355 has the Virgin and Child, with a cross above. Fig. 347 has a heart-shaped signet, with a neat border inclosing a large A. No others have been observed like this.

Fig. 333 is from Scipioville, in the same county, and is much like fig. 330. Both have the fleur-de-lis beneath the L. Fig. 352 was picked up by the writer by a Cayuga grave, where many others had been found. At first sight there seemed to be an unfinished L, but a comparison with some to follow will show that it is the base on which the large heart was often placed.

There follow several from the McClure farm in Hopewell. Fig. 319 is a small ring with a head in profile. Fig. 320 is another fine ring, with a Maltese cross within a circle. Fig. 331 has an angular signet, with a plain border around a large L and a small heart. Few rings occur on this site.

Bronze rings have been abundant on some Oneida sites on Oneida creek, but most have disappeared. Two only will be mentioned now, both being from Munnsville. Fig. 321 has I. H. S. in plain characters, with a cross above. Fig. 358 is a small ring, with a pair of compasses inside of a ring.

Quite a number have been found at Brewerton, but of most of these neither figures nor descriptions have been secured. Fig. 315 has the unusual feature of a head with the face toward the outer edge. The work is rude for there is a great difference in these rings in every way. Fig. 359 has a very small signet for the size of the ring, and on this are circles and lines variously arranged. In 1900 there were taken from one grave in that place, 35 of these bronze rings, tied together with buckskin.

Dr Hinsdale obtained some rings in Pompey. Fig. 278 is one of these, and is a large pewter ring, with a double line of small projecting beads of the same material. Fig. 279 is a fine specimen, with the crucifixion, and figures seated on either side. . Fig. 323 is another fine ring, with an inside circle, cross and I. H. S.

The following are also from Pompey. Fig. 327 is a large and fine ring from a grave on the Williams farm, obtained in 1886. It has the cross and I. H. S., but in rather unusual form. Fig. 346 has a small head.

A number which follow are from the site of 1677, in Pompey. Fig. 313 has a king's bust and scepter. It is large. Fig. 326 is also large, and has the I. H. S. and cross. Fig. 335 has a large heart poised on a curved base, and with a border of curving lines. Fig. 336 is a smaller variant of the last, but the ring proper is more elaborate. Fig. 341 is of gold and has the Greek monogram for Christ. This is unique. Fig. 345 has a St Andrew's cross within a circle, and with dots between. Fig. 348 has characters of uncertain meaning, and the same may be said of fig. 350. Fig. 357 represents the crucifixion. This site has yielded so many rings and crosses as to suggest the thought that the Christian converts might have made it their home.

Of course Indian hill, the seat of the first Onondaga mission, would not lack articles of this kind; and a number follow from the Onondaga fort of 1654. Fig. 318 has a full face and a large key. Fig. 322 has the I. H. S. and cross while the ring part is quite elaborate. Fig. 328 is small, with I. H. S. and the cross. There is a border of dots or stars. Fig. 332 has a rather rude seal, and is small. The large L is not well done, and there may be a rude crown above it. There is a small heart and the ring part is elaborate. Fig. 340 has a small seal with a medium sized heart resting on the usual base. Fig. 342 has lines of indefinite character. Some may be intended for palms. Fig. 344 is a peculiar silver ring. The central portion is a quatrefoil, intersected by a four pointed star. In the center and at the ends of the quatrefoil are either pearls or small lustrous stones, some remaining. It is of very unusual character. Fig. 349 has characters suggestive of a Greek monogram. Fig. 351 also lacks definiteness, but was probably intended for a large heart with inclosing lines. Fig. 353 has a design suggesting either a cup or paten, perhaps with a crown above. Fig. 356 has a good figure with extended arms, and a halo above the head. If intended for the crucifixion, the cross does not appear.

All those included in the foregoing paragraph have been recently gathered from this old town whence hundreds have been taken before. Mr Clark said that De Witt Clinton had a gold finger ring from this place, procured at the time of his visit.

Fig. 339 was sent to the writer by the late Rufus A. Grider, but the design is somewhat indistinct. A medium sized heart appears above the usual base, and there are other figures. This is from the Mohawk valley, where the old mission sites have yielded many. The writer regrets that he could not have given more attention to this class of articles, in visiting several notable collections, but time would not allow of this. Though of small size each one has minute details which must be preserved, and much time is often required to make out the design on account of corrosion. A great many, quite distinct and as full of interest, could doubtless be added to those here portrayed.

Fig. 364 is an illustration of a novel ring. A coil of iron wire several times encircled a finger, preserving the bone and as much of the flesh as came in contact. This was found in Fleming. Fig. 368 is a small coil of copper wire which may have served as a ring. This was found at Brewerton by Dr Hinsdale.

When the Iroquois made silver fashionable, bronze rings disappeared, and for two centuries their silver successors have fairly well held their place. They have disappeared more by being worn out than through a change of fashion, none having been made for many years. Fig. 363 shows one the writer bought of an old Oneida woman. The general form is well preserved, but, if there were ornamental details, they have been worn away. Mrs Converse was fortunate in getting two fine examples here illustrated from her drawings. Fig. 360 has two hands clasped over a heart. Fig. 361 has two hearts united. The symbolism is evident in both cases, though the Indians possibly may have cared little for this. Fig. 362 is the largest silver ring the writer has seen, and, as it was probably worn only on great occasions, it is in fine preservation. It was given to Albert Cusick's mother by her second husband *Sah-go-hone-daté-hah*, "The one that spares another," a Tuscarora chief. When seen by the writer it had a string of 96 beads of mourning wampum attached to it.

Among the Onondagas *Kă-ne-kă-ah*, "Round thing," may mean a simple ring. *En-neah-hah'-sen* represents one for the finger. The former word is used for a hoop, but not for a wheel.

Fig. 383 is in Theodore Stanford's collection in Munnsville. It has an octagonal seal, containing a flaming heart beneath what may be an elongated star or a radiant cross. The ordinary rings are found on the Oneida sites about Munnsville, but most of those collected have already disappeared.

The five following rings are from Pompey, dating between 1655 and 1680. Fig. 389 has no emblems, but is of bronze. It had a setting which has been lost. Fig. 390 shows a person supporting the dead Christ. Fig. 391 may have been intended to show the letter L, but, while the work is sharp, the design is doubtful. Fig. 392 has stars, crossed arrows, etc. Fig. 393 has a circle, lines and dots. Fig. 394 is in Mr Frey's collection. There are human figures on each side of the crucified Christ.

A plain pewter ring was found at Hoffman's Ferry, which was a camping place. As these were common during the past century, the age and use are both uncertain, but, from the location, it seems to have had an Indian owner. Surface finds of this kind are subject to doubt.

Silver crosses

The finest foliated silver cross, used by Indians, which the writer has seen, was found on the banks of the Maumee river, Ohio, and was exhibited at the Pan-American Exposition in 1901. This is 13½ inches long and 8½ inches wide. It weighs 8 ounces, and is a Roman cross, each limb having foliated ends. One nearly as large, and perhaps as heavy, belongs to Mr Walter C. Wyman of Chicago. It is 12¼ inches long, and 8¾ inches wide, and is more highly ornamented than any of these large crosses which the writer has seen. Three limbs have the usual foliation, but the upper one terminates this abruptly. At the intersection are four ornamental quadrants, forming a quatrefoil with the surface ornamentation. The base bears longitudinally the name of the former owner, *Pandikaikawa*, an Ottawa chief. Two other fine crosses are in the same collection, but they are of a different character. An account of these was given in the *Chicago Evening Post*, Oct. 8, 1898.

Two much like this, but without the central quadrants, were figured and described by Mr Charles C. Jones in the *Smithsonian Report* for 1881, p. 619. The drawings are half size, and show both faces of each cross. In these the rings for suspension remain. One cross is 8⅜ inches long by 7½ wide; the other is 8 inches long by 7¼ broad. They were taken from a grave-mould at Coosawattee Old Town, Murray co. Ga., in 1832, and are fine examples. Mr Jones said: "Indian relics were found associated with them. We incline to the opinion that they may properly be referred to the expedition of Hernando de Soto." As will be seen, their true date is the latter part of the 18th century, or possibly later. In New York and Canada they were in use but a few years ago. To show how little these were thought of as symbols, it may be said that on one of the Georgia crosses the owner had engraved an owl and a horse's head. Morgan said that birds and beasts were sometimes engraved on them, and two had the name of Montreal stamped in the center. The writer obtained all his double crosses from one pagan family.

Fig. 198 is from Morgan's report in 1852, and is a reduced figure of a cross 10 inches long and 6 wide. This he had from a Cayuga at Grand River reservation in Canada. It is of the common form. Fig. 209 is a smaller one from the *League of the Iroquois*, the size of which is conjectural, but it is apparently about 5 inches long. In the center it approaches the character of Mr Wyman's fine Ottawa cross.

Fig. 205 is a reduced drawing of a fine silver cross in the Richmond collection, which is 9⅜ inches long and 7¼ wide. The ring for suspension remains. Each limb is foliated, and the name of Montreal is stamped in the center. The writer did not learn its history, but many seem to have been made at Montreal for general trade purposes, and they are usually without any religious symbols on the surface. They may be considered mere ornaments. This also appears from Sir William Johnson's journal of Sep. 17, 1761, when he left some at Detroit for purposes of trade. They were to be sent to Mackinac. He said: " I counted out and delivered to Mr Croghan some silver works, viz, 150 earbobs, 200 brooches or breast buckles, and 90 large crosses, all of silver, to be sent to Ensign Gorrel." *Stone.* Johnson, 2:464

The smaller silver crosses are usually ornamental, and have from one to three crossbars. Those with two are most common, and have been widely distributed. A fictitious antiquity and rarity have been ascribed to these under the name of the patriarchal cross. All of the writer's examples he had of the Onondaga Indians, as stated before.

Mr David Boyle figured a fine double-barred silver cross from Beausoleil island in the Georgian bay. It is like fig. 207 but larger, being 4½ inches high. Two others were with it. He said of this:

> Double-barred crosses of this kind are now, it seems, unknown in connection with Catholic worship, and it is somewhat singular that, since we received these relics of the old Hurons, another one almost identical in size and pattern should have found its way to our collection from the Northwest, where it was picked up during the late rebellion. . . Regarding the peculiar form of cross from Beausoleil island, Dean Harris of St Catharines, writes: This small, dual cross is permitted to be worn only by patriarchs of the Latin church. It is also sometimes carried as a processional cross, and, as Richelieu was bishop and cardinal, it is possible that he used such a cross either as pectoral or processional. In all probability these ornaments were sent out to Canada during his *régime*, and, receiving the blessing of the priest among the Hurons, would have served the double purpose of being ornamental and of being used in devotion." *Boyle,* 1891, p. 64

As Richelieu died in 1642 and the Hurons were overthrown at the close of that decade, while this form of silver ornament did not come into use among the Indians till a century later, this ingenious conjecture fails; but the writer has shown that the double-barred crucifix was used in New York in the 17th century. The makers of mere ornaments since then had little care for the original use or meaning of articles, so long as they were attractive to the eye, and would sell.

Some Indian chiefs have been represented wearing the triple cross, but otherwise the only one reported and figured is Mr Wyman's. The central bar of this is longer than the others, and all the limbs are foliated. Tasteful open work adds to the effect, but the general character is that of similar double crosses. This form has been called the pontifical, but is purely ornamental in design. The figure furnished is 3¾ inches long by nearly 2¼ in the widest part. Like his others, this is from a Michigan grave.

Mr Wyman has also a fine silver double cross, 4⅞ inches long and 2½ broad, with a ring for suspension. The base is broad, and the ends of the limbs foliated, the upper crossbar being shorter than the lower. This is a common feature. Crosses of this form and size have been found in many places, and he has several. Fig. 207 is a smaller one of this form, from the Rose hill farm, east of Geneva, N. Y., and is of actual size. Though made for suspension, the broad base would allow a standing position. These are like the Canadian crosses mentioned above.

Fig. 203 shows one of several from the Onondaga reservation, belonging to the writer. They are smaller than the last, and of a slightly different form. The Indian owner had over a dozen of these, and they were common among western Indians. Fig. 201 is a cross of the same form in the collection of Mrs Converse, probably made from the same pattern, but with surface tracery. There were earlier double crucifixes of the same general form from which the merely ornamental cross may have been derived. There was a small ring for suspension, now usually lacking.

Fig. 212 is an ornamental double cross with several openings. All the limbs are foliated, and there is a ring for suspension. The general character is that of Mr Wyman's triple cross, but it is smaller. The writer had this from an Onondaga squaw, from whom a friend obtained its counterpart. The form seems rare, and both sides are ornamented.

Small silver Roman crosses seem much rarer, and none have been reported perfectly plain. Fig. 206 is of one with scalloped edges, from East Cayuga, a site occupied 150 years ago. Fig. 202 is of another which the writer bought of an Onondaga Indian in 1901.

Though nearly the same in size and design, they have not the same number of crenulations. Another was found at Portsmouth O., but they are everywhere rare.

Crosses and crucifixes of other materials

Silver articles, as a rule, were in little use by the New York Indians in the 17th century, but other materials naturally overlapped the introduction of these. Copper, brass and bronze were at first the favorites for ornament, but pewter or lead was used, and even iron had a place. Fig. 196 is a cross of lead from the McClure site in Hopewell, commonly known as *Onaghee*. Circular projections tip the three lower limbs, and it is probable that a similar one has been lost from the top, where the customary perforation would have weakened it. It is a good deal battered, but there seems to have been a human figure on its face.

Crucifixes have often been found on nearly all Iroquois sites of the last half of the 17th century. The coming of the Jesuit missionaries in 1654 marked a new era of this kind, though French and Huron captives may have brought some earlier, or they may have been among the spoils of war. Previous to that time most European articles came from the Dutch. Mr Clark noticed the finding of "a curious brass image" in Pompey, just before his history was published. He also said:

> A valuable cross of gold was several years ago found in the west part of Pompey, and was sold for $30. The significant I. H. S. was upon it. Numbers of crucifixes and crosses have been found. Brass crosses are frequently found, with those letters, and the initials of the Latin title put upon the cross at the crucifixion, I. N. R. I., and so are medals of the same metal. *Clark*, 2:273

After mentioning a brass dial plate and a paint box of the same metal, Mr Clark speaks of "another more perfect one beautifully wrought," as though meaning another box. His figure, however, is of the two sides of a crucifix, with a loop at the top and a fluted base. The obverse has Christ with extended arms, and a halo and I. N. R. I. above the head. Under the feet are the crossbones and skull. This side has a beaded border. On the reverse angels crown the Virgin Mary, over whose head is the dove, and under her feet the skull and crossbones. *Clark*, 2:280. This is from the fort of 1696.

On adjoining lands, Mr Clark said, " brass crosses have frequently been plowed up, and some of the most perfect and highest finished ones have over the head of the Saviour the letters I. N. R. I. Most of the crosses found in other places have the letters I. H. S." *Clark*, 2:281. This was more than 50 years ago, and they are occasionally found yet, as well as on earlier sites.

A few representative early forms will be illustrated, and the reader will readily see the difference between these, with their many symbols, and the ornamental forms already described, in which these are lacking. Most of these are either of brass or lead.

Fig. 194 is the obverse of a fine brass crucifix belonging to the late Hon. George S. Conover of Geneva N. Y. He had several of these. This has a beaded border. Christ has his arms extended, a halo and I. N. R. I. are above his head, and the skull and crossbones beneath his feet. The reverse has the Virgin Mary with the moon beneath her feet, and the dove descending from above. On the arms on this side are the words IESVS MARIA. Mr Conover had this from a burial place on the Read farm, lot 32, town of Seneca. Mr Conover said: "As many as 50 crosses are known to have been found in this burial ground, and probably a great many more, as in former times, when the field was plowed, it was not an uncommon thing to find a number of crosses and other emblems with religious devices."

Fig. 217 is a fine brass crucifix from the Rose hill farm, east of Geneva N. Y., obtained by Dr W. G. Hinsdale. The obverse has Christ with the usual emblems, but with the head bent down. On the reverse are the Virgin and child, with emblems near the ends of the arms. The pointed top of this crucifix is perforated, and forms nearly a true pitch.

Fig. 214 is a brass crucifix from Cayuga county, having a beaded edge. The only emblems accompanying the figure of Christ are the halo and inscription above the head. The obverse of this is not recalled.

Fig. 195 is a brass crucifix obtained by Dr Hinsdale in Pompey. The head of Christ is bent unusually low, and the loop rises in a triangular form from the cross. Fig. 204 is a small crucifix from Pompey, the limbs ending in trefoils. Each of these includes a small circle, but the general design has become obscure through use. Fig. 211 is a beautiful brass cross with several perforations. The ends of all the arms are ornamented, and I. H. S. appears on the upper arm. Dr Hinsdale met with this in Pompey. It is an unusual form.

Fig. 213 is from a figure furnished by Dr Hinsdale of a curious bronze crucifix belonging to a boy in Pompey. It has two crossbars, and each limb is angularly expanded at the end. On the obverse the arms of Christ are extended on the upper limbs, I. N. R. I. appearing above his head. SALVATOR is on the lower crossbar, and MVNDI on the lower limb. On the reverse the Virgin occupies the center, with the sun above her head. MATER is on the lower crossbar, and DEI on the lower limb. With this was fig. 219, a fine but small brass crucifix with each arm terminating in trefoils, each of which incloses a human face. Christ and the inscription I. N. R. I. are on the obverse; the reverse has two angels crowning the Virgin Mary, and above her head is the sun.

Fig. 216 is from the Onondaga fort of 1696 and is much like fig. 213, having two crossbars and similar expansions at the ends of the arms. The design is somewhat obscure and no letters appear. Fig. 218 is from the same site. The figure of Christ is on the obverse as usual. The reverse shows the descending dove, the Virgin, and the angels on the crossbar.

Fig. 208 is a small cross from the Mohawk valley, figured by Mr S. L. Frey. The limbs terminate in trefoils, and there is some surface decoration, this being a mere ornament of comparatively recent days. It is of silver, and the loop at the top is broken. Fig. 215 is also one of Mr Frey's illustrations, but is an older article. Both sides are adorned with emblems, the obverse having I. N. R. I., the crown of thorns, nails and hammer, ladder, skull and crossbones; while the reverse has the heart in the center, the spears beneath, and other emblems on the limbs.

Fig. 210 is a brass crucifix from Munnsville, of a larger size and with more emblems, but with much the same arrangement. One end of the crossbar differs from the other.

Fig. 158 shows both sides of a thin brass crucifix found by Dr Hinsdale among the salt vats near the Ganentaha spring, the seat of the French mission house of 1656. It is of antique appearance, but in fine preservation, and the natural impulse is to connect it with this mission. The French inscription strengthens this. On comparison with recent memorials of modern religious missions, the writer is inclined to ascribe it to our own day. The obverse has Christ on an inscribed cross, and with the knees unusually drawn up. Each limb of the cross terminates in a trefoil outline, and these each include two or three small bosses on the obverse. The reverse is quite plain, and has SOUVENIR on the short, and DE MISSION on the long bar of the cross.

In the Hildburgh collection is a crucifix in which the lower limb but slightly exceeds the other three in length, these being alike in extent.

Mr Henry E. Kingman, of Owego, kindly sent an account of two brass crucifixes he found at that place in 1901, none occurring there before. One was perfect; the other broken at the base. The robed figure mentioned is the Virgin, and the general character like some before described. He said:

> On one side is the Saviour crucified, with a skull and crossbones at the bottom. Above Christ's head are the letters I. H. S., but these letters are not distinguishable on the perfect cross. On the broken one they can readily be read. On the reverse is the Saviour in his robes, while above his head is a crown, and above the crown a dove. On either side of the head is a cherub. The crucifix is 1¾ inches long from the tip of the loop to the base, and 1⅛ inch in width. The other crucifix is wider.

A fine but small brass crucifix is from Pompey, having an extreme length of 1½ inches. It is foliated in a peculiar way. There are semicircular projections on each side of the limbs, but the intermediate projection is long, narrow and pointed. On the obverse is a figure of Christ with extended arms. The reverse has the Virgin, the angels and the dove. Fig. 381 is of this.

Mr Stanford, of Munnsville, has a cross of some size, with expanding arms, suggesting the Maltese cross, but with the proportions of the Roman. Crosses and crucifixes seem rarer on the Mohawk and Oneida sites than farther west. Those of Onondaga have been most prolific, but they are now everywhere rare as compared with those found by early settlers, and are valued accordingly.

Coins

The most common coins found on Iroquois sites and used for ornaments are the liards of the 17th century. The value is about half that of the English farthing. They were at first a silver coin, but in the reign of Louis 14 became restricted to copper. On the coin the date follows the inscription, and shows several issues. In numismatic records they are described as dated in 1656 and subsequently. On Indian sites they are perforated for attachment or suspension, and are often too much worn to make sure of the date; but in New York this seems always during Louis 14's reign. Those reported as having the date of 1650 may be safely referred to 1656, a slight erosion affecting the date. In Cayuga county 44 were found in a pewter mug, which had suffered only by early use. All were of the middle of the 17th century.

The obverse has a crowned bust, with the inscription in capitals: "L. XIIII, Roy. de. Fr. et. de. Na.;" reverse, "Liard de France," across the surface. On the lower part are three fleurs-de-lis, and above these a letter, showing at what place they were made, for there were several. A stood for Paris, B for Rouen, and examples of both these are found at Indian hill, Pompey.

In Onondaga county they seem restricted to the place first visited by the French in 1654, and where the Onondagas remained till 1682. There they often occur. Fig. 303 shows both sides of one found at that place, which has two perforations. Fig. 304 is another with but one hole. Fig. 297 is from the same site, and has R instead of Roy. This has two perforations.

The writer has since had in his hands liards from Pompey of the D and E issue, the former being from the Lyons mint.

A smaller coin has a head on the obverse, face to the left, with OVR. D. C. D., with the rest indistinct. Fig. 396 is of this. On the reverse are four fleurs-de-lis, the upper one above a castle tower. Part of the inscription is AN. 1639. DOVR. One better preserved is in Theodore Stanford's collection, appearing in fig. 397. On the obverse is the King's head. LOVS remains on one side, and FR. ET. NA. on the other. The reverse now barely suggests the lilies. The date is 1640; then comes a cross, and then the letters DOVR. DE. TOV. Both these are of copper, and they are slightly wider than our present cent. No coins of older date have been reported from New York Indian sites.

Honorary medals and gorgets

Though the Indians preferred substantial presents, they were not insensible to honorable distinctions. They thought powder and ball a better means of defense than the king's arms, but tokens of personal rank they valued. So that Robert Livingston made a shrewd suggestion on returning from Onondaga in 1700, when he recommended to Governor Bellomont:

> That his Ma^tys armes be sent to all the 5 Nations and put up on each Castle, and if your Lord^p thought fit, that some of their Chief Sachems had a badge or the King's armes cut in silver to hang about their necks upon solemn days, I presume it would be acceptable. *O'Callaghan*, 4:651

Whether this was at once done does not appear, but Queen Anne did not forget the wise suggestion. At his first conference with the Five Nations, in August 1710, Governor Hunter introduced a new feature. The queen had been greatly impressed by the visit of the New York Indians to London, and took a warm interest in her forest allies, regarded by her as subjects. On this occasion Governor Hunter said:

> Her Maj^ty has sent them as a pledge of her protection, and as a memoriall to them of their fidelity, a medall for each Nation with her Royall effigie on one side, & the last gain'd battle on ye other, which as such she desires may be kept in your respective Castles for ever, she has also sent her Picture on silver twenty to each nation

> to be given to y^e Chief Warriors, to be worn about their necks as a token that they shall allwaies be in a readinesse to fight under her Banner against the common enemy. *O'Callaghan.* Col. Hist. 5:222

Very proud, doubtless, were these hundred warriors, but the custom begun by the English two centuries ago, and by the French still earlier, has come down to our own day.

In July 1721 the governor of Pennsylvania presented the Seneca chief *Ghesont* with a gold coronation medal of the king, charging him "to deliver this piece into the hands of the first man or greatest chief of the Five Nations, whom you call *Kannygoodk,* to be laid up and kept" as a token of friendship between them. *Hazard.* Minutes, 3:130

Possibly the plate mentioned in Penhallow's *Indian Wars* was silver medals or badges. The Six Nations and Scaghticoke Indians were well received in Boston in 1723, and the lieutenant governor "gave each of them a piece of plate, with figures engraven thereon, as a turtle, a bear, a hatchet, a wolf, etc., which are the escutcheons of their several tribes. And the more to oblige them to our interest, they had a promise made of one hundred pounds a scalp, for every Indian that they killed or took." *Penhallow,* 1:101

In the *Canadian Antiquarian and Numismatic Journal* for January 1899, Mr R. W. McLachlan gave an account of medals awarded to Canadian Indians. In this are many interesting particulars, the author being a specialist in these, and putting many early notices in an accessible form. The following observation is of general interest:

> Size was of great importance to the red man, who was no admirer of miniature medals. Some were struck exceeding three inches in diameter. These were for the great chiefs, for there were smaller medals for lesser lights. . . While we may be inclined to believe that more minor than great medals were distributed, as there could not help but be more lesser than "Great Chiefs," this fact is not borne out by the number of existing medals; the larger medals are by far the more abundant. This may, in a measure, be accounted for by the fact that the minor chiefs more readily parted with their medals; and that, too, at a time when there were few collectors in the country to secure and hand them down to posterity, while the great chiefs' medals passed from father to son as an insignia of office. . . Old silversmiths relate that, as late as 60 years ago,

the Indians used to bring in their medals to have them made over into gorgets and armlets. *McLachlan, 2:4*

Mr McLachlan quotes the earliest mention of medals in Canada, in 1670-71, from volume 4 of the *Archives* of that country:

> A savage of the Sault, (Caughnawaga), named Louis Atouata, godson of the King, who preserves as a precious thing the medal of which his Majesty made a present to him.

A medal was struck about 1670, for the friendly Indians of Virginia, but had no relation to New York, while most French medals came there at one time or another.

Mr McLachlan also describes a medal of 1693, in five sizes. The obverse has " the head of Louis 14, with flowing hair, and on the reverse those of his son the dauphin and the three sons of the latter." But one original is known, but restrikes have been made. This writer also quotes an account of medals used in Canada in 1723, and placed after death on the biers of Indian chiefs.

In another paper in the *Proceedings of the American Numismatical and Archaeological Society* of New York, 1883, p. 17-20, he gave two quotations not found in O'Callaghan's New York colonial documents. Governor Vaudreuil wrote thus Sep. 21, 1722:

> I have received the letter with which the council has honored me, and the twelve medals bearing the portrait of the King; eight small and four large. I have continued to be careful not to be too lavish with this favor among the Indians, and to give them only to those who by their services to the nation deserve them, and to those whom I desire to bind to our interest by this mark of honor.

The reference is to an established custom. He quotes also from Beauharnois under date of Aug. 25, 1727:

> Since the death of M. de Vaudreuil, the Rev. Father Jesuits have not asked medals for the chiefs of the settled Indians, for whom it was customary for them to ask some. The Rev. Father de la Chasse, to whom the Marquis de la Vaudreuil had given one, tells me it is absolutely necessary to provide some more. I have received proof of this. The Indians from above, when they come down to Montreal, would not relieve me from promising them to several who have served us well among their tribes. I pray you to enable me to satisfy these savages, and to send me a dozen small medals and six large ones.

On the same subject Governor Beauharnois wrote again, Oct. 15, 1732, to the Count de Maurepas:

> I thank you, My Lord, for the twelve medals you had the goodness to send me for the Indians. His Majesty may be assured that I will make the most of them, and that I shall not distribute them except to Chiefs, whose services and attachment to the French will be known to me. As there are many such to whom I have promised such a token of honor, and as the adventure of our Iroquois and Hurons against the Foxes places me under the obligation of giving a few to the principal Chiefs of the expedition, I beg you, My Lord, to order that some be sent me next year, so that I may be enabled to invest them with this mark of honor, which also renders them more respectable among their people. *O'Callaghan.* Col. Hist. 9:1036

Sir William Johnson gave "three silver gorgets to three of the principal warriors" of the Ganuskago Indians, at Fort Johnson, Feb. 26, 1756. At the same place, July 12, he "put medals round the necks of the Shawanese and Delaware chiefs, and also to the chief Sachem of the River Indians, accompanied with the usual exhortation, also gave silver Gorgets to some of their head Warriors." *O'Callaghan.* Col. Hist. 7:160

He held a council at Onondaga lake that year. When the Onondaga speaker had concluded his address, July 2, "Sir William then rose and put a medal about the Speaker's neck and declared him a Sachem of that Council, charging him to be steady to his Majesty's interest." *O'Callaghan.* Col. Hist. 7:149

To take off the medal was to renounce friendship or allegiance, and this the French encouraged when English medals were worn. A Seneca chief, who wore an English medal in 1775, said to Governor Vaudreuil: "I tear off the medal of the King of England, which hangs from my neck and trample it under foot." *O'Callaghan.* Col. Hist. 10:378

The year before, the La Presentation Indians had sent to M. Duquesne "the medals the English had presented to some of that village who had furtively assisted at the Council at Orange." *O'Callaghan.* Col. Hist. 10:263

Two Iroquois chiefs gave up their English medals to Vaudreuil in Aug. 1756. Of another he said: "I have appointed this Onondaga a chief, and have decorated him with the King's medal, in consideration of the proofs he has afforded me of his fidelity," the Onondagas being then almost equally divided. In December of that discouraging year to the English, an Oneida chief gave up two English medals to the French, saying:

> Father. We can not retain two medals which we have formerly had the folly to accept from our brethren, the English, as a mark of distinction. We acknowledge that these medals have been the true cause of our errors, and that they have plunged us into bad business. We strip ourselves of them; we cast them from us, in order not to think any more of the English. *O'Callaghan.* Col. Hist. 10:513

The gorgets are not usually described, but many were given to the Five Nations and Delawares. The following description, given to the French in 1758, seems that of a well known medal:

> The Governor of Philadelphia has held a great council with them, at which he has distributed a great quantity of belts, calumets of peace, and more than 40 silver gorgets. A chief of the Five Nations has carried to the Commandant of Niagara one of those gorgets on which was engraved a Sun, with an Indian and a Squaw feeding a fire, and an Indian smoking a great calumet with an Englishman under the shade of the tree of peace. *O'Callaghan.* Col. Hist. 10:839

An affecting incident took place soon after Sir William Johnson's death. Some Onondagas were at Johnson Hall, Sep. 12, 1774, and the Bunt's eldest son produced the various marks of the baronet's regard.

> Then (according to the old custom after such an event) he laid them down consisting of a silver hilted sword, laced hat, medals, flags, &c. before Col. Johnson, observing that his dear friend, being now no more, these things must be restored to Col. Johnson for his disposal. Then a noted Chief and particular friend of Sir Wm Johnson's arose, took off his medal &c. and did in like manner as the former, as did some others. . . Then Col. Johnson put the medals &c. about their necks and returned the several articles they had surrendered. *O'Callaghan.* Col. Hist. 8:498

A similar thing occurred at the Canandaigua conference, held by Col. Pickering in 1794. There was a condolence at the opening. Red Jacket said they returned gifts to the donors when any one died, and he returned to the commissioners a silver gorget which had belonged to a dead chief, and which had been given him by the United States.

These were not considered equal in value to medals. In 1741 the Marquis de Beauharnois invested an Iroquois chief of the Sault with a gorget, till he could give him a medal as a mark of rank, but all medals had not this character.

The finest of the English silver medals which the writer has seen belonged to Mr John Jones, of Baldwinsville N. Y. It came to him as an heirloom, and was said to have been from the body of an Indian chief. The history is not very clear. Though it has been roughly handled by children, it is in good preservation, owing to the deep border and high relief. On one side is the British coat of arms, with the usual mottos. On the other is a fine head of George 2, facing the left. The inscription around the border is GEORGIVS. II. D: G: MAG: BRI: FRA: ET. H: REX. F:D. in roman capitals. As this monarch reigned from 1727 to 1760, the medal would come between these dates, and probably during the old French war. It is 1⅞ inches across, and is quite heavy. Fig. 280 shows the obverse of this.

In *American Colonial History illustrated by Contemporaneous Medals*, this issue is described:

> *Obverse*: GEORGIVS II. D. G: MAG: BRI: FRA: ET: H: REX: F. D. Bust of the King, laureate, facing the left, without drapery. *Reverse*. The Royal Arms within the Garter and with supporters, helmet, crown and crest; upon the Garter, DIEU. ET. MON. DROIT. Silver, cast and chased, with loop and ring. Size 30. *Betts*, p. 177

The medal here represented accurately corresponds with this description, and must be considered one of this issue. American medalists are of the opinion that these are the 30 brought to New York by Sir Danvers Osborne in 1753, for distribution to the Indians, reference to which is made in a following paragraph. Everything agrees with the family tradition.

There is another familiar Indian medal of an earlier date, and about the size of a silver dollar, which has been found in New York. It will be observed that Indian medals not found here, or which have no connection with New York, are not illustrated in this paper. Several colonial and Canadian medals are thus passed over.

The medal just referred to was found when the Erie canal at Oriskany was enlarged in 1849. Some graves were opened, containing 10 or 12 skeletons, with ornaments and medals. On one was a head of George 1, with the title, George, king of Great Britain, in capitals. On the reverse was an Indian behind a tree, with bow and arrow, shooting at a deer. This part of the account is clear, but some other statements are erroneous. For instance, a medal of George 1 is said to have been dated in 1731. The other medals were dated from 1731 to 1735. Some of the later Georges used the same design.

Besides one of these medals from the lower Mohawk valley, somewhat indefinitely reported, Mr Conover described one from the Read farm in Seneca, which was taken from the Indian cemetery there, and from which he deduced its age. He described it as "a copper or brass medal of about 1½ inches in diameter. On one side of this medal was the representation of an Indian with a bow and arrow in the act of shooting at a deer, a tree being between them, and the rays of the rising sun being alongside of the top of the tree. On the reverse was a medallion likeness, and around it and near the edge of the circumference the words, George, king of Great Britain. As the reign of George 1 was from 1714 to 1727, and such tokens were only presented to those Indians who were of importance among their own people," and this could not be secured in youth, he inferred that it must have been given to an old man who was buried with it in the first half of that century. As the medal might have been preserved in the family, the conclusion does not follow as to the date of the cemetery, as Mr Conover's farther statement shows:

> There has also been lately found what at first seemed a small lead bullet, which had been flattened, but, upon its being cleaned from the dirt and corrosion, it proved to be a leaden seal, such as was used in colonial times, and which had the date of 1767 cut on its face.

In the above account Mr Conover should have said the obverse had the head of the king, but this is a mere technicality. In the series of newspaper articles by him, from which this is quoted, he recorded many things worthy of preservation. A careful and judicious writer, he did much excellent local work.

One of these figures of medals appears in Miner's *History of Wyoming* from an example found on the Susquehanna in 1814, and now said to be in a collection at Carbondale Pa. Fig. 289 is from his picture of this, but, though he said it bore the date of 1714, this does not appear. In that year George 1 began to reign. Mr McLachlan writes:

> In 1859 two medals were turned up among other Indian remains, on the banks of the Ohio river. The older of these has on the obverse the head of George 1, and the other the head of George 2. The reverses of both have a representation of an Indian aiming at a deer.

More of this class of medals have been found in Pennsylvania and Virginia than elsewhere, and they are divided into these two reigns. As all may occur in New York, a brief description of some of these is given. They are of brass.

One like the medal described by Miner, but smaller and found in Virginia, is now in Wilkesbarre. Another, found at Tunkhannock Pa., has a large Indian throwing a spear at a small deer on the left. This is quite thick. Another Virginia example has on the obverse a laureated head of George 1 facing the left. The inscription is Georgius—Mag. Bri: Fra. et. Hib. Rex. in capitals. Reverse: Indian at right, nearly erect, bending forward under a tree which follows the curve of the rim, holding a bow, etc. A running deer under a tree at the left. *Betts*, p. 83

Another Pennsylvania specimen has the king's laureated bust to the left, in armor. The inscription is Georgius II. D. G: Mag. Br. Fr. et. Hib. Rex. in capitals. Reverse: Indian at right under a tree, shooting at a deer running away under a tree at the right. *Betts*, p. 84

This should probably be the left, as in the other cases, for the reported arrangement would not suit the requirements. In another medal it is possible the spear described may have come from a wearing away of the bow, changing the appearance. As no figures have been given, the descriptions are followed.

In a letter to the writer Mr McLachlan says:

> Another medal for the Indians is referred to in an article in the *Historical Magazine* for September 1865, page 285, which states that "Sir Danvers Osborne, after he had been appointed Governor of New York in 1753, brought out, among other presents for the Six Nation Indians, 30 silver medals, his majesty's picture on one side, and the royal arms on the other. . . These medals seem to have disappeared, possibly a stray one may be found in some collection."

Sir Danvers Osborne died two days after his installation in office, and there is no reference to these medals in the succeeding Indian councils. The Baldwinsville medal is one of those described. A remarkably fine bronze medal found in the Onondaga valley in 1893, between the old Indian fort and the present reservation, has no reference to the Indians and yet may have belonged to one of them. It is finely executed, and was found by Mr George Slocum, in whose hands it still remains. Fig. 311 shows the obverse and fig. 312 the reverse.

On the obverse is a fine bust of the duke of Cumberland, with the legend in capitals around the edge, WILL: DUKE: CUMB: BRITISH: HERO. The other inscriptions are in capitals. Under the bust and following the rim is a scroll inclosing the words "BORN 15 APR. 1721." Next the rim, on the reverse, are the words, "REBELION JUSTLY REWARDED;" and under a group, in two straight lines, is the continuation "| AT CARLILE | ANNO 1745. |" A bareheaded officer leads forth two prisoners on the left; one of them a Scotchman with a rope around his neck; the mounted duke points with his sword to the right, as though ordering them to execution. This is not mentioned among the war medals of the British Museum.

A very interesting series of medals was designed expressly for Indian use, but the exact date is in question. An unused example is figured in the *Medaillier du Canada,* or Canadian Coin Cabinet, published at Montreal in 1888 by Joseph Leroux M. D. The brief description follows: "837. Obv.: View of the City of Montreal. MONTREAL. D. C. F. Rev.: Plain, in order to write the name of the Indian chief to whom the medal was awarded. Size 32, rarity 8."

This retains the ring in the loop above, but this is commonly lacking. On the obverse the city is represented with houses, church spires and the British flag, and has lines of defense between it and the water. A small cartouche below incloses the letters D. C. F. The reverse is perfectly smooth in this case. In others the Indian's name is in script above, following the rim. The name of the nation is in capitals, in a straight line across the center.

As Mr McLachlan has given special attention to these medals, some quotations are here made from his letters to the writer in 1891. He differs from the latter regarding the date, connecting them with Sir William Johnson's western trip in 1761. He says:

> He is at Oswego, ready to sail on July 21, 1761: "Got everything on board the vessel, then met the Onondaga chiefs. When assembled, I bid them welcome. . . Then delivered the medals sent me by the General for those who went with us to Canada last year, being twenty-three in number." The taking of Montreal was almost the only engagement in which the New England Algonquin tribes acted with the Iroquois. Montreal was invested, at the conquest, by an army in which the Indians under Sir William Johnson took a prominent part, and there is no reason why the view of Montreal should have been used for any other occasion than the conquest.

In regard to other points, he adds that in his opinion an actual instead of conventional view of Montreal would have been given when better known:

> The D. C. F. is a stamp such as jewelers use to stamp their plate. It has been stamped on after the medal was cast. That the name of the tribe should be spelled differently from Sir William Johnson does not matter, for the item states that they were ordered by the General, probably Amherst. He therefore would adopt his own spelling. Medals given after the Revolution bear the head of George 3 and the royal arms.

In a letter of June 4, 1902, Mr McLachlan maintains his position and adds:

> I have claimed that the medal was made in New York. This is borne out by the medal described by Betts, page 227, which bears the same maker's mark. The medal is too crude in workmanship to be of English manufacture. The New York Indian medal clearly

proves that the maker was not a Canadian. Hence the medal could not have been revolutionary. As is well known in history, the bulk of the Indians that came to Montreal were from Michigan and other western districts, while those who were at the capitulation of Montreal were Mohicans and Iroquois. We find none of the Montreal medals among the tribes that were under the French influence previous to the conquest. All I have seen or heard about bear the tribal names, Mohicans, Mohawks and Onondagas. This to me is a most convincing argument. These three tribes would not have been singled out to the exclusion of the great numbers of the western tribes. Another strong proof is that we have no other medal that could have been distributed in 1761 by Sir William Johnson, as described in the entry in his diary. Then the inscription scratched on my medal must be counted of some value as evidence.

All of Mr McLachlan's arguments have been stated, and due weight should be given to them and to the rank of their author, from whom the writer is compelled to differ, though with some hesitation. I do not find it proved that these medals were made in New York and not in Montreal. Some of the best silversmiths were in the latter place at both dates mentioned. If they were made in New York, it must be remembered that that city was in British hands through nearly the whole of the revolutionary war, and was in constant communication with Quebec and Montreal. There are two medals directly relating to the conquest of Canada and the taking of Montreal, which Johnson might have used. The inscription scratched on Mr McLachlan's medal is clearly erroneous in date, as will appear later. The omission of western tribes on the medals found is no more singular than the omission of four of the Six Nations. It is negative evidence at best. Thus, while it would be unwise to say that the true date is not that of 1761, there is but a presumption in favor of that date.

Some reasons against it will appear in the descriptions of these and other medals, but others may be briefly stated here.

Conventional views of cities were then customary, as may be seen on old powderhorns and seals; Montreal was the seat of the Indian agency during the Revolution and the headquarters of warlike operations; the spelling of Onondagos is that of Col. Claus, the agent, and not that of Johnson; the River Indians were constantly employed by the British government, had villages in the Mohawk territory, and virtually belonged to that people. In the Revolution 60 of them are said to have fought on the English side. It is improbable that Johnson had 23 medals with names and nations inscribed, for distribution at Oswego. They would have had a general character, whereas these were filled out from time to time for personal services. Some, held in reserve, were never engraved. Lastly, some of these names correspond with those of chiefs attached to early land treaties with the State of New York.

In 1761 Johnson also had similar medals for the Oneidas, but none of these have been found. He was at Oneida Old Castle, July 16, and said:

> I then acquainted them that General Amherst had sent me, some time ago, medals for such persons as went to Canada with the army last year, which I was now ready to deliver, were the persons here to whom they belonged. As they were not, must keep them till I had an opportunity of delivering them myself, that no mistake might be committed. *Stone.* Johnson, 2:432

Mr J. V. H. Clark described one several times examined by the writer:

> A silver medal was found near Eagle village, about the size of a dollar, but a little thinner, with a ring or loop at one edge, to admit a cord by which it might be suspended. On one side appears in relief, a somewhat rude representation of a fortified town, with several tall steeples rising above its buildings, and a citadel from which the British flag is flying; a river broken by an island or two, occupies the foreground, and above, along the upper edge of the medal, is the name Mòntreal. The initials, D. C. F., probably of the manufacturer, are stamped below. On the other side, which was originally made blank, are engraved the words CANECYA, Onondagoes. . . . There is no date on this or any other of the medals. But this must be at least older than the Revolution. *Clark,* 2:274

This should be *Caneiya* in script and Onondagos in capitals. Fig. 281 shows this medal as drawn by the writer at Mr L. W. Ledyard's, Cazenovia N. Y. in 1882. It was in his possession for many years. If of revolutionary date, as the writer thinks probable, the *Caneiya* of the medal might correspond with the Onondaga chief *Kaneyaagh*, of the treaty of 1788.

Mr McLachlan kindly furnished figures of some medals. Fig. 282 shows one of these, and his description follows:

> Obverse, Montreal; in the exergue, DCF stamped in a sunk oval. A view of a walled town with a body of water in the foreground, into which a small stream flows. There are five church spires ranged along the middle of the town, and a flag displaying St George's cross to the right. Reverse. Plain; Onondagos is engraved in capitals across the field, and the name Tekahonwaghse in script at the top. Some one has, at a later time, scratched across the lower part with a sharp pointed instrument, in three lines, | Taken from an Indian | cheif in the AMERICAN | WAR, 1761.|

Mr Betts also illustrated and described this medal.

In the addition there is an evident error for there was no war in that year, but, if it were 1781, it would correspond with the *American* war, as the English termed that of the Revolution. Allowing this date, *Tekahonwaghse* might be *Takanaghkwaghsen*, an Onondaga chief who signed the treaty of 1788, or *Tagonaghquaghse*, appointed chief warrior of that nation in 1770, and perhaps the chief of 1788. Mr McLachlan had this medal from the Bushnell collection. He added, "I know of another in the collection of James Ollier of New York. I am under the impression that it is also in silver, and that it bears the name Onondagos." No account could be obtained of this.

Fig. 283 is a similar silver medal, bought by Mr McLachlan in London. On the reverse this has Mohawks in the field, and *Aruntes* above. It is in extra fine condition. This name does not appear among the many on record in the French war, nor is there any resembling it, but "The Answer of Thayendanegea a Sachem, and of Ohrante a warrior of the Mohocks to the Right Hon^{ble} Lord George Germaine", London, May 7, 1776, is preserved in full. *O'Callaghan.* Col. Hist. 8:678

Those familiar with the great variations in spelling Indian names, and the rank of this person, will have little doubt that Ohrante and Aruntes are the same. It is a curious coincidence that this well preserved medal was obtained in London, where Ohrante spent some months. In another place the Mohawk warrior is called Oteroughyanento, Indians often having two names. In the writer's exhaustive list of Iroquois personal names this nowhere else appears, but it is an unexpected gratification to link the three Iroquois names obtained on these medals with well known persons of the revolutionary period.

Concerning these two Mohawks, Guy Johnson wrote in London, Jan. 26, 1776: "The Indian Chief who accompanied me, with his companion, are persons of character and influence in their country; they can more at large speak on any matters that may be required of them." *O'Callaghan.* Col. Hist. 8:657

Fig. 284 is another medal of which Mr McLachlan says:

> It is in the government collection at Ottawa, and came from the collection of Mr I. F. Wood of New York. This is in pewter, and has Mohicrans in the field, either misspelled in the copy or the original. Above is *Tantalkel.* Judging from the medal given to *Tantalkel* of the Mohicans, we infer that his services could not have been valued so highly as those of the Onondaga warrior, for his reward is in the baser metal. How one of that tribe came to receive a medal is explained when we learn that 70 River Indians accompanied Johnson to Montreal.

Another Mohican fared better. The *Albany Argus*, Sep. 27, 1875, described a silver medal found by Mr Kelly of Ballston Spa N. Y. The obverse was as usual. On the reverse, as reported, was Mohicans in capitals, and *Son Gose* in script. Mr Joseph E. Wescot purchased it of the finder, and sold it in 1902 to Mr E. Hallenbeck, 749 Liberty st., Schenectady. Through the kindness of the latter, the writer is not only able to give an accurate figure, but to settle the spelling of a word in doubt. It is Mohigrans, the engraver having mistaken in his orders G for C, and R for K. It was easy to do this. The Indian's name is also *Songose.* This medal was found on the Kelly place, near the bank of the Mourning kill and the old Canadian trail. It is somewhat worn, but in good condition. It is remarkable that so many have the name of this nation. Fig. 388.

In the work of C. Wyllys Betts, already mentioned, he speaks of another Mohican silver medal, on the reverse of which was *Madoghk,* with the nation's name engraved in the usual way. He also takes note of the doubtful spelling, now cleared up by the writer's examination of the Hallenbeck medal. The error was made in all.

The Mohicans became so closely linked with the Mohawks as to share their fortunes and that of the Johnson family. Some of them are mentioned in the raids in the Mohawk valley. The medals can hardly be referred to Burgoyne's luckless campaign, for each was engraved for a particular person, nor were the Onondagas yet in the field. None known bear the Oneida name, a significant fact, for they were on the American side. Nor were they among Butler's presents in the winter of 1777-78, who gave "in particular 300 of Burgoyne's silver medals to their young warriors." *Halsey*, p. 204. They are not all of silver.

In a description of American medals of the Revolution by J. T. Fisher of Philadelphia, *Collections of the Massachusetts Historical Society*, vol. 6 of 3d series, is one of these medals, but without place or name of Indian, and with another misspelling: "Medal—probably for distribution among the Indians. *Obverse*, A view of Montreal, and above it the name MONTREAL. *Reverse*, The name MOHIGHANS."

In *Le Medaillier du Canada* is a figure of the French Oswego medal of 1758. A better one is given by Mr Betts. As medals were very freely distributed about that time, some of these may have been placed in Indian hands, though of this there is no proof. It is nearly 1¼ inches wide. All the letters are capitals. "Avers: Bust to the right. LUDOVICUS XV. ORBIS IMPERATOR. 1758. Rev.: Four towers. Wesel, Oswego, Port Mahon, Expug, Sti Davidis arce et solo aequata." *Leroux*, p. 177

Leroux assigns a number to Indian use, but some are later than the colonial period. One has George 3 and Queen Charlotte face to face. Another may be like the fine one recently obtained from the Ottawas by Walter C. Wyman. This has a bust of George 3 to the right, and the arms of Great Britain on the reverse. There are several of this character to be mentioned later.

Mr McLachlan discredits Stone's statement that the medals of 1761, "by order of Amherst, were stamped upon one side with the baronet's coat of arms," nor does there seem any direct proof of this. He adds:

> I have in my collection 10 or 12 medals relating to the Indians. One of these represents a lion watching a wolf, with a church and schoolhouse surrounded by trees in the background. This, to my

mind, relates to the conspiracy of Pontiac. French medals are now very rare; only one or two are known. After the conquest the Indians had to give them up, or exchange them for medals bearing the bust of George 3. I think it was not customary to strike medals specially for the occasion, but to give the Indians copies of some popular medal of the time; later medals bearing the arms of Great Britain, with only the name and title of the king on the obverse, for inscription. Such are all the medals of George 3, with the single exception of the lion and the wolf.

The one last mentioned has a fine bust of this monarch as a young man in armor. The inscription is simply GEORGIUS III. DEI GRATIA. There is nothing suggestive of Indian life on the medal, and Mr McLachlan merely gives it as his opinion that it referred to the Pontiac war. He states, however, that this was struck as a peace medal for a conference with the Indians at Niagara in 1764, followed by the treaty of 1765. He adds:

> One of these medals, found in the grave of *Otussa* (Pontiac's son) is now in the cabinet of the United States mint at Philadelphia. A considerable number of these medals must have been struck, as two reverse dies were used. The two varieties were found in 1889 buried in one grave in Michigan. *McLachlan*, 2:14

The reverse of this large silver medal has no legend. A lion lies on the turf in the foreground, a wolf drinks at a stream, a church and house are in the background. Without an Indian symbol its Indian use seems clear. Three others of this monarch's reign are ascribed to 1762 and 1764, and two of these refer to New York. Medalists suppose them to have been struck for Canadian chiefs at the close of the French war. They are quite as likely to have been given to New York Indians, and there is no reference to Canada, as on some of earlier date.

The one ascribed to 1762 has the youthful bust of George 3 in armor, and the British arms on the reverse. One of 1764 has his bust in armor to the right, with the inscription, GEORGIUS III. D. G. M. BRI. FRA. ET. HIB. REX. F. D. On the reverse, "Happy while united," in capitals. In exergue, 1764. Indian holding a pipe, seated near an officer on a roll of tobacco. Background, city and harbor of New York. *Betts*, p. 226

Another has the same obverse, and the same date and legend on the reverse. An officer is in the foreground of the landscape, and an Indian is seated in a rustic chair on a river bank, on the right. On a rocky bank is a house, and there are three ships beyond. *Betts*, p. 227

Some medals of George 2 are of special interest. War had not prospered. Pennsylvania had suffered severely, but in 1757 a preliminary treaty was made with the Delawares and Shawnees. The Six Nations were balancing between the English and French, and great efforts were put forth for their support. So a medal was prepared in 1757, appropriate to the times. On the obverse is a laureated bust of George 2 in armor, with the inscription, GEORGIVS. II. DEI. GRATIA. On the reverse is the legend, in capitals, " Let us look to the Most High, who blessed our fathers with peace." In exergue, 1757. The field has a man seated under a tree on the right, offering a calumet to an Indian seated on the other side of a council fire. The sun is above the Indian on the left. This medal occurs in silver, copper and pewter, and is supposed to be the first struck in America. It was made for the Friendly Association for regaining and preserving peace with the Indians. *Betts*, p. 179. This is the one mentioned in the Canadian documents.

Two, relating to the conquest of Canada and the capture of Montreal, seem more likely to have been those given by Johnson to the Indians in 1761 than those which Mr McLachlan assigns to that period, as they were issued in time and relate to that event. One has a laureated head of the monarch, with the inscription, GEORGE II. KING. On the reverse is the legend, CANADA SUBDUED. In exergue, MDCCLX. S. P. A. C. A pine tree rises in the center, under which is a weeping woman seated on the ground. On the left a beaver crawls up the bank. *Betts*, p. 192

Another, issued by the same society, has points of resemblance and is of the same date. On the obverse is a river god reclining, with a bow, quiver and ax below him. A beaver climbs up the bank, and overhead is a shield with Amherst's name. The legend in capitals is, " The conquest of Canada completed." The reverse has a mourning woman seated under a tree. To the left is an eagle, and to the right an ax, etc. The legend is, "Montreal taken MDCCLX." In exergue, "Soc. promoting arts and commerce." *Leroux*, p. 166. As these have Indian symbols, and one of them Amherst's name and that of Montreal, they seem to suit in every way Johnson's lavish distribution of medals at Oswego, when sent him by his leader.

Red Jacket's medal has been made the subject of controversy. Fig. 411 is taken from an article in *Harper's Magazine*, 1866, in which its history is given. A note says:

> It is said that there are in existence other medals, each purporting to be the genuine Red Jacket medal. Possibly copies of it may have been made when it was at one time or another in pawn in the hands of those to whom Red Jacket had pledged it for whisky. But none of these copies were ever owned by Red Jacket himself. The original medal, from which our drawing was made, is, as we write, open to public inspection at the jewelry establishment of Messrs Browne and Spaulding, in Broadway, New York, by whom, with the assent of the owner, it was placed at our disposal for illustration. We have in our possession the most abundant proof that it is the genuine, and only genuine, medal presented by Washington to Red Jacket. *Harper's*, 32:324

It then belonged to General Ely S. Parker, a Seneca chief. In 1890 a medal was presented to the Red Jacket Club of Canandaigua, as having belonged to that chief. Mr William C. Bryant, of Buffalo, wrote to Hon. George S. Conover on the subject, in the following words:

> *Buffalo, Feb. 3, 1891*
>
> FRIEND CONOVER: There is no rational ground for doubt that the medal worn by General Parker is the one presented by President Washington to Red Jacket. This medal was a familiar object to all Buffalo residents while the old chief lived; and, after his death in 1830, it was well known that it descended to, or became the property of Jemmie Johnson, Red Jacket's nephew and the successor of Handsome Lake, the great Iroquois prophet. Soon afterward, and shortly before Johnson's death, it became the property or possession of General Parker, its present owner. In 1851 or 1852, when a boy, I visited Jemmie Johnson at his cabin, and he exhibited the medal to me.
>
> It should be remembered that the Red Jacket medal is not a unique article, but one of many which were stricken off by the

government when Red Jacket was alive, for presentation to distinguished chiefs of the Iroquois Confederacy. There are, perhaps, two or three specimens similar in appearance to the Red Jacket medal still extant. Probably the one presented to the Red Jacket Club of Canandaigua is one of this class of medals, contemporaneous with that of Red Jacket. That it was ever worn by the old chief is not probable. Sa-go-ye-wa-tha had only one medal, and of this he was very fond and proud. During his career he owned several tomahawks and gave away at least two of them, whose subsequent history can still be traced; but he seemed to cling to this medal as if it were a most precious heirloom or sacred amulet.

I was present at the Six Nations mourning council, when General Parker was invested with the title of Door Keeper *(Don-e-ho-ga-wa)*, one of the 50 grand sachemships of the Confederacy. This was, I think, in 1850. He then wore the Red Jacket medal, and in open council it was exhibited to many of Red Jacket's compeers, none of whom doubted its authenticity.

To this Mr Conover added:

A few years since the Cayuga Indians residing in Canada employed an attorney in Buffalo to urge a claim against the State for a portion of the annuity paid by the State to the Cayugas in the United States, they having been deprived of the same since the War of 1812. Among other matters put in the hands of this attorney was a silver medal, a facsimile of which is to be found in the printed law case. This medal is of the same size, and substantially the same as the Parker medal, having the same inscription on one side, viz, "George Washington, President, 1792." This medal is claimed to have been presented to *O-ja-geht-ti*, or Fish Carrier, at that time the head chief of the Cayuga Indians, and has been in the possession of every successor in office, who has been uniformly styled by the same name from that day to the time of the present Fish Carrier. The medal presented to the Red Jacket Club at Canandaigua, I understand, is about one third smaller in size than either of the two above named.

Mr L. H. Morgan says of these:

The government has long been in the habit of presenting silver medals to the chiefs of the various Indian tribes at the formation of treaties, and on the occasion of their visits to the seat of government. These medals are held in the highest estimation. Red Jacket, Corn Planter, Farmer's Brother and several other distinguished Seneca chiefs have received medals of this description. Washington presented a medal to Red Jacket in 1792. It is an elliptic plate of silver, surrounded by a rim, as represented in the figure, and is about 6 inches in its greatest diameter. On each side it is engraved with various devices. The medal is now worn by *Sose-há-wa*, (Johnson) a Seneca chief. Medals of seashell, inlaid with silver, were also used. *Morgan*, p. 388

At the reinterment of Red Jacket in 1884, Gen. Parker exhibited this medal. " It is of silver, oval in shape, 7 inches long by 5 inches broad. The general had dressed it in black and white wampum; the black indicating mourning and the white peace and gladness." The above long diameter includes the loop.

A copy of this medal is now in the National Museum, Washington, and data obtained thence made a difference in date and size:

The original of Red Jacket's medal is engraved. It is oval, 5¾ by 4 inches. It was presented by President George Washington, in 1795, to the Indian Red Jacket, who, with a number of chiefs of the Six Nations, visited Philadelphia, then the seat of government, at the invitation of the first president. Obverse: figure of Red Jacket presenting to General Washington the pipe of peace. In the background a man plowing and a pioneer cabin; beneath, the inscription " George Washington, President, 1795." Left field, a pine tree. Reverse: the American eagle, with clouds and rays above and 13 stars below; in beak a scroll, with " E Pluribus Unum."

Mr J. V. H. Clark described a brass medal found near Indian hill, Pompey, in 1821:

It was without date, on one side of it was a figure of Louis 14, king of France and Navarre. On the reverse side was represented a field, with three flowers-de-luce, supporting a royal crown, surrounded by the name of Nalf Lanfar & Co. It was about the size of a Spanish pistareen, had been compressed between dies, characters and letters distinct. *Clark*, 2:255

On a neighboring site a brass medal was found, on which was a horseman with drawn sword. On the other was " William, Prince of Orange ", with a crest or coat of arms; the date was obliterated. William, Prince of Orange flourished in 1689, and was conspicuous in the affairs of New York for several years previous. This medal may have been a present by him to some distinguished chief. *Clark*, 2:258

That medals and coins should be sometimes found near the old colonial forts is to be expected, but they have seldom been reported, and have no necessary connection with Indian life. A fine gold piece found near Fort Brewerton, and bearing the arms of the duke of Brunswick, has been shown the writer. From the same place came a copper medal, 1½ inches in diameter, having an erect woman, with shield and cornucopia on the obverse, and the legend, "Honor obtain'd through virtue," on the reverse. It is some years since the writer has seen this, but he has the impression that it was once a familiar form, as far as the obverse is concerned.

Religious medals

A much larger class of medals was of a religious character, usually of small size and varied forms. Mr Clark described a large one:

> In July 1840 was found, on the farm of Mr William Campbell, by his son, on lot number three, La Fayette, a silver medal, about the size of a dollar, and nearly as thick. On one side is a device, surmounted by an angel on the wing, stretching forward with its left hand, looking down upon those below with a resolute, determined and commanding countenance. Far in the background is a lofty ridge of mountains. Just beneath and away in the distance, is seen an Indian village or town, towards which the angel is steadily and earnestly pointing. Above this overhangs a slight curtain of cloud or smoke. Between the village and the mountain are scattering trees, as if an opening had just been made in the forest; nearer are seen various wild animals sporting gayly. In bolder relief are seen Europeans, in the costume of priests and pilgrims, with staves, exhibiting by their gestures and countenances, hilarity, gladness and joy, winding their way up the general ascent towards the mountain, decreasing in size from the place of departure, till lost from view. Among them are wheel carriages and domestic animals, intermixed. On the right is a fair representation of a cottage, and a spacious commercial warehouse, against which are leaning sheaves of grain. The whole is surrounded by the following inscription in Dutch: GEHE AUS DEINEM VATTER LAND, 1 b. M., XII., V. 1, and at the bottom across, LASST HIER DIEGVTER. On the opposite side there is a figure of the sun shining in meridian splendor, casting its noontide rays over a civilized town, represented by churches, stores, dwellings, etc., with various domestic animals, and numerous persons engaged in husbandry and other pursuits. In bolder relief stand Europeans in the costume of the 15th and 16th centuries, engaged as if in animated and joyful conversation and greetings, and by various attitudes manifesting happiness and joy. On the right is represented a section of a church, at the door of which stands a venerable man, with head uncovered, with his hands

extended, as if welcoming these persons to a new and happy habitation. This side is surrounded by the following inscription: VND DV SOLLT EIN SEEGEN SEYN, 1 b. Mos., XII., V. 2, and across the bottom as follows: GOTT GIBT SIEWIEDER. *Clark*, 2:274

This is a great amount of detail for one medal. The quotations are from the German Bible, and relate to Abraham's migration. Clark questioned whether the medal might not be a relic of the Zeisberger mission of 1750, but the site where it was found had then been long abandoned, and it suggests the encouragement of emigration from the fatherland. It may be referred to the end of the 17th century.

Mr Clark gives figures and descriptions of several small medals, but those which follow are mostly those examined by the writer, and are but a sample of those abundant during the Jesuit missionary period.

Fig. 296 shows one which differs from the rest in having a German inscription, and its age may be uncertain. It was found on an Indian camping site near Baldwinsville in 1880, and is of brass, elliptic and thin. On one side is a border of 15 stars, inclosing a cross placed above the letter M. Below is a flaming heart, with another pierced by a sword. On the obverse is the Virgin Mary, with a halo around the head and drooping palm branches in each hand. She seems to be treading on a serpent, but this is corroded and may be a date. The German inscription follows the border in a double line. It is now indistinct and the writer made it out as follows: GEHE PA GEN . . . NDE EMPFANGEN. RITT. FUR. UNS. The inner line is D: W: ZU: D: UNSRE: ZU: FURCHT. NEHMEN. As some letters are doubtful Mr Stewart Culin suggested that the opening words might be *Gehe fagen*, and the last but one *Flucht*. The medal has disappeared, and the inscription remains in doubt. It may be recent, as the writer has examined a smaller silver one of 1830, found at Mobile in 1868, closely resembling this. It has but 12 stars, and the double inscription is in English:

"O Mary, conceived without sin,
Pray for us who have recourse to you."

This differs greatly from the German inscription above, and has been rather common in the century just past, but there are early examples which are similar. Mr Clark described a small brass medal found in Pompey, and in good preservation. It had:

> The figure of a Roman pontiff, in a standing position, in his hand a crozier, surrounded with this inscription: *B. virg. sin. P. origi con.*, which we have ventured to write out *Beata virgo sine Peccato originali concepta*, or as we might say in English, The blessed Virgin conceived without original sin. On the other side was a representation of a serpent, and two nearly naked figures looking intently upon it. This one is very perfect in all its parts, and the letters as plain as if struck but yesterday. *Clark*, 2:273

He described two others from a later site. One was "an octagonal brass medal nearly an inch in diameter, having a figure with the name *St Agatha*, and the Latin word *Ora*, a part of the Gregorian chant. Also a silver medal half an inch long, with a figure inscribed *St Lucia*, and the same fragment of a chant." *Clark*, 2:280

Fig. 298 shows the first of these, and fig. 300 the second. His figure has *Ora. P. N.* in the latter instance, and these letters seem to have been obliterated in the other. This gives the familiar *Ora pro nobis.*

Many of this class of medals have been found in Cayuga county, but most of these have been dispersed. Mr Betts described one from Scipioville, on the obverse of which is a female saint, facing the right. The inscription is Santa. Rosa. de. Lima. Ord. He said that this saint is still very popular in Canada. On the reverse is a head of St Paul, facing the left, with arms crossed and holding a crucifix. *Betts*, p. 32

Though these medals are usually of brass, some are of lead and silver. Fig. 291 is of lead, and was found at Indian castle in Pompey. It is elliptic in outline, showing a bust with uplifted hand, and is perforated at the base. Fig. 294 is of silver and from the same place. It is circular and suggests a coin, but the writer recalls none like it. A lion holding arrows is on one side, and on the other three lines of letters and a date partially effaced. The date, as well as the site, is of the 17th century. There is a single perforation.

Fig. 292 is a heart-shaped medal, with an embossed heart in the center, and a dotted border. It was found at Scipioville. Fig. 293 is from the same place, and is larger than most examples. It is elliptic in outline, with a fine half length figure and a partially effaced inscription relating to Francis Xavier. Fig. 301 came from the same site and is octagonal. A fine bust, with raised hand, has an inscription around it, of which "Francis, Ora P." can yet be read. Fig. 302 is a fine example from the same place and of the same form. A cross, with a halo of rays, is above what may be either altar or font, on either side of which are kneeling figures. Fig. 295 is another octagonal medal from Cayuga county, with the bust of a man and a child. Fig. 299 shows both sides of an elliptic medal from a small site near the entrance of Onondaga creek into the lake, and which was much frequented about the year 1700. On both sides are figures apparently in ecclesiastical garments, with hoods thrown back. The inscriptions are partly effaced, but the following may be traced on one side: S. IO. . . . ANNES . . . CAPISTR. On the other appears S. P. A. S. (a chalice here in the border) CHALIS. S. . . . ON. There is a prominent loop above.

An elliptic silver medal, recently found in Pompey, is too much defaced for definite description.

Two brass medals are in Mr Stanford's collection at Munnsville. Fig. 385 is the largest of these, and has on one side a head of Christ with a halo. The inscription is IESVS FILIVS DEI. On the reverse is a head of the Virgin Mary, also with a halo, and the words MATER DEI. Fig. 384 is a smaller medal, with the Virgin and child on the obverse. On the reverse is the sun above, and below this a figure which may be altar, candlestick or font, being somewhat worn. On either side is a kneeling angel.

A fine brass medal was found by the Rev. W. H. Casey at Union Springs, in the autumn of 1902. It is in excellent preservation and is 1½ inches long, including the loop, and nearly 1⅛ wide. On one side is a fine head of Christ and SALVATOR MUNDI; on the other a head of the Virgin Mary and MATER CHRISTI. It was seen too late to illustrate here.

Brooches

About the beginning of the 18th century, Iroquois taste in ornament took a decided turn. Glass and porcelain beads were still in favor, but the brass and bronze ornaments began to give place to silver. The change came gradually, but very decidedly, and in the end affected all Indian tribes. Loskiel said: "The rich adorn their heads with a number of silver trinkets of considerable weight. This mode of finery is not so common among the Delawares as the Iroquois, who, by studying dress and ornament more than any other Indian nation, are allowed to dictate the fashion to the rest."

By the middle of that century the Indians had everywhere become critical in this matter. La Presentation (at Ogdensburg) was settled in 1749, and reference is made to silver articles in the account of the settlement in *Lettres edifiantes et curieuses.* The matter of rival trade, as between New York and Canada, was as burning a question then as now, and the latter had the same disadvantage of position in winter, enhancing the price of goods. Toronto and Niagara could have stopped, it is said, "all the savages, had the stores been furnished with goods to their liking. There was a wish to imitate the English in the trifles they sold the savages, such as silver bracelets, etc. The Indians compared & weighed them, as the storekeeper at Niagara stated, and the Choëguen (Oswego) bracelets which were found as heavy, of a purer silver and more elegant, did not cost them two beavers, whilst those at the King's posts wanted to sell them for ten beavers. Thus we were discredited, and this silver ware remained a pure loss in the King's stores. . . . To destroy the Trade the King's posts ought to have been supplied with the same goods as Choëguen and at the same price." *O'Callaghan,* p. 437

William Smith published his *History of New York* in 1756. He said of the Indians, "Many of them are fond of ornaments, and their taste is singular. I have seen rings affixed, not only to their ears, but to their noses. Bracelets of silver and brass round their wrists, are very common." *Smith,* p. 69

Heckewelder described the funeral of a woman in 1762: "Her garments, all new, were set off with rows of silver brooches, one row joining another. Over the sleeves of her new ruffled shirt were broad silver arm spangles," etc. A good deal of wampum and many silver ornaments were placed elsewhere. A note says of the brooches, " a kind of round buckle with a tongue, which the Indians fasten to their shirts. The traders call them brooches. They are placed in rows at the distance of about the breadth of a finger one from the other." *Heckewelder*, p. 270

In Col. Proctor's journal of May 3, 1791, he relates his visit to the Onondaga village 3 miles east of Buffalo. They had 28 cabins, and were " well clothed, particularly the women, some of whom were dressed so richly, with silken stroud, etc., and ornamented with so many silver trappings, that one suit must be of the value of at least thirty pounds." *Penn. Archives*, 4:591

Miss Powell was at Buffalo in 1785, and gave an account of Capt. David, a clean, handsome and graceful Indian:

> His hair was shaved off, except a little on the top of his head, to which his ornaments were fastened; and his head and ears were painted a glowing red. Round his head was fastened a fillet of highly polished silver. From the left temple hung two straps of black velvet, covered with silver beads and brooches. On the top of his head was placed a foxtail feather, which bowed to the wind, as did two black ones, one in each ear. A pair of immense earrings, which hung below his shoulders, completed his headdress, which I assure was not unbecoming, though I must confess, somewhat fantastical. His dress was a shirt of colored calico,—the neck and shoulders covered so thick with silver brooches as to have the appearance of a net; and his sleeves were much like those the ladies wore when I left England, fastened about the arm with a broad bracelet of highly polished silver, engraved with the arms of England; four smaller bracelets round the wrist, of the same material; and around his waist a large scarf of very dark colored stuff, lined with scarlet, which hung to his feet; part of this scarf he generally drew over his left arm, which had a very graceful effect when he moved. And his legs were covered with blue cloth, made to fit neatly with an ornamental garter bound below the knee. *Ketchum*, 2:96

These accounts fully show the abundance of silver ornaments in that century. Elkanah Watson noticed the same thing at the treaty of Fort Stanwix in 1788. Many of the Indian women were dressed "in the richest silks, fine scarlet clothes, bordered with gold fringe, a profusion of brooches, rings in their noses, their ears slit, and their heads decorated with feathers." These things bear out the statement made by an Onondaga to the writer, that 50 years ago some families had each a bushel of such ornaments.

In speaking of personal adornment, Loskiel said that Indian women were well dressed:

> The Delaware men pay particular attention to the dress of their women, and on that account clothe themselves rather meanly. There are many who would think it scandalous to appear better clothed than their wives. *Loskiel,* 1:51

The women wore petticoats, reaching a little below the knee. Some wore garments "of printed linen or cotton of various colors, decorated at the breast with a great number of silver buckles, which are also worn by some as ornaments upon their petticoats. . . They adorn their ears, necks and breasts with corals, small crosses, little round escutcheons, and crescents, made either of silver or wampom." *Loskiel,* 1:52

Heckewelder speaks much to the same purpose:

> The wealthy adorn themselves besides with ribands and gartering of various colors, beads and silver brooches. These ornaments are arranged by the women, who, as well as the men, know how to set themselves off in style. . . The women, at the expense of their husbands or lovers, line their petticoat and blue or scarlet cloth blanket or covering with choice ribands of various colors, on which they fix a number of silver brooches, or small round buckles. *Heckewelder,* p. 203

Quotations regarding the lavish use of silver ornaments, specially in the latter part of the 18th century, might be multiplied. It may be well to add what Mr Morgan has said of this feature of Seneca dress. The short overskirt of calico, called by them *Ah-de-á-da-we-sa*, and reaching above the knee, usually had one or two rows of brooches on each side, as the writer often has seen them. Morgan adds:

> The Indian female delights in a profusion of silver ornaments, consisting of silver brooches of various patterns and sizes, from

those which are 6 inches in diameter, and worth as many dollars, down to that of the smallest size, valued at a sixpence. Silver earrings and finger rings of various designs, silver bracelets, hatbands and crosses, are also found in their paraphernalia. These crosses, relics of Jesuit influence, are frequently 8 inches in length, of solid silver, and very valuable, but they are looked upon by them simply in the light of ornament. *Morgan,* p. 386

The last remark should be always borne in mind. The writer has bought many of these ornaments of many Indians, but they were without significance to them. If a meaning is suggested, they will good-naturedly assent to anything; they do not think of one themselves, as Mr Morgan found.

Apparently the brooch was an evolution from the gorget, for some metallic ornaments of this kind were tied on, not buckled. Such ornaments are rare, and may never have been common. As far as known, they are circular, and like the brooch of that form except in the center. Fig. 17 is a silver one of this kind, having four interlacing rings inside of the outer circle. There is no place for or sign of a buckle, and it was probably tied or sewed to the garment, for there is no reason to think it was suspended. This was found in the town of DeWitt N. Y. and is in the Richmond collection. Fig. 21 is a smaller one of the same design from the Mohawk valley, which belongs to Mr Frey. A large and handsome one from Ohio was shown at the Pan-American Exposition. In this a slender outer ring inclosed an open six pointed star, bisected by an inner circle. Fig. 160 is of copper and has no central opening. It is from the site of 1677 in Pompey, and is unfortunately broken.

Like wampum, the silver brooches partially answered the purpose of money. The Onondagas often placed them in pawn, but sometimes parted with them at a fixed value. Some visitors at Oquaga, in 1769, observed this there. "Some of the women wear silver brooches, each of which passes for a shilling, and are as current among the Indians as money. Brant's wife had several tier of them in her dress, to the amount perhaps of 10 or 15 pounds." *Halsey,* p. 143. That is, she wore from 200 to 300 of these; and this seems no rare example.

The brooch proper has a central opening, across which a tongue extends, like that of a buckle. The cloth is pinched up and passed through this opening, the tongue penetrating it twice, when it is drawn back, and the brooch is firmly in place. When they were plentiful, the smaller ones were usually arranged in two lines down the center of the overskirt in front, and across the front of the lower edge. The larger ones were reserved for the upper part of the dress. Sometimes small ones were arranged on ribbons. Most of the smaller forms were very abundant. In those of similar outline quite a variety was obtained by varying the perforations and the surface ornamentation. The latter was mostly made with punches, but the graver was occasionally used. Those formed of brass are extremely rare, the writer having obtained but two among the hundreds of silver ones which he has seen. There are early examples in graves. Of these the writer has seen several from graves in Wisconsin. They were mostly circular, but one stellar brooch had broad and short rays.

Preliminary to further descriptions it may be said that Mrs Harriet Maxwell Converse furnished an illustrated paper on "The Iroquois Silver Brooches" for the State Museum report for 1900. Many of the illustrations will be recognized here, nearly half coming from the writer's collection and the remainder, also found in the paper mentioned, from that of Mrs Converse, there being a mutual interchange of figures.

Fig. 31 is a fine brass brooch which the writer obtained at Onondaga. It is a circular ornament of good size, with crenulated and embossed edge. To show the rarity of this material employed in such a use, it may be said that an Indian friend was surprised at it, never having seen one of the kind before. The writer afterward secured another circular brooch of brass which was plain and much smaller.

The simplest and perhaps earliest form of the brooch seems to have been that called the round buckle, allusions to which have been quoted from several authors. It is frequent yet, either plain or ornamented. With the three double-barred silver crosses, described by Mr Boyle in Canada, was a piece of cloth decorated with 20 of these. Dr Evarts, of Silver Creek N. Y., showed the writer

35 plain rings buckled on a piece of cloth, which he had from the neighboring Cattaraugus (Seneca) Indians. The writer has many of various styles of finish, and might easily have had more. In the 18th century they were cheap as compared with others, and were lavishly employed. A few are shown.

Fig. 35 is one out of a number the writer obtained at Onondaga. Fig. 38 is out of another lot he had from the same place. These are rounded on the face and flat on the back. It is quite a common size. Fig. 23 is a larger size from the same place, and made in the same way. Fig. 25 differs from these in being broader and flat. The writer had this also from Onondaga, but it is not so common as the last. Many of these simple forms have some surface ornamentation. Fig. 19 was found in the Mohawk valley, and is small, elliptic, and has many transverse grooves. Fig. 24 has the same style of ornament, but is larger and circular. It is also a Mohawk example.

Fig. 85 preserves the circular form, but has broad undulations on the surface. This and the next three the writer had from Onondaga. Fig. 88 differs from the last in having the indentations only on the outer edge of the surface, and in their being separate instead of continuous. Fig. 90 is a flat ring, with distinct indentations on each edge of the surface. It is a fine and rather rare form. Fig. 91 is worked so as to show a continuous series of semicircles all around the center of the surface. This is not a frequent style now. Fig. 74 has nine bosses on the surface, with intervening cross lines. The writer got this at Onondaga, and has seen none like it.

Fig. 46 was given to the Buffalo Historical Society by Mrs Van Rensselaer, with other fine brooches. It has the ring form, but of an angular style. At each angle is a boss, the intervening space being narrower and with three cross grooves. Fig. 73 has a similar character, but the curved spaces between the bosses have no grooves. This came from the Tuscarora reservation.

Fig. 20 is the smallest of the circular brooches, which the writer has seen, that can not be classed with the ring brooches or round buckles. Small as it is, eight small circles adorn the surface. It is almost flat, and came from a grave in Cayuga county.

No brooches are more effective than those having the form of a star, and the writer has been fortunate in securing many figures and examples of these. They are usually flat, but fig. 1 has a slightly convex surface. This is of a large size, and has a heart-shaped opening in the center, and 20 short embossed rays. They never have sharp points, as these would be inconvenient. This came from the Cattaraugus reservation. It is more highly ornamented than most of these. Fig. 2 shows a fine star brooch, with eight rays and an ornamented surface. This the writer had from Onondaga.

Fig. 3 is another Cattaraugus star brooch, with 16 short embossed rays. It is otherwise perfectly plain. Fig. 5 is another from Cattaraugus, with eight rays. The writer obtained three of these, and they are the smallest of the kind he has seen. They were probably used on ribbons. For its size this is well ornamented.

Fig. 4 is a fine, large star from Onondaga, with 12 embossed rays. In the figure dark spaces show all the perforations except the central one. Fig. 6 is a small star brooch from the Tuscarora reservation, with seven rays. The surface decoration is simple.

The following five the writer obtained at Onondaga. Fig. 7 is a star of 13 rays with a well ornamented surface. Fig. 8 has 12 rays, and is much smaller and simpler. Fig. 9 is one of the prettiest he has found. The edges of each of the nine embossed rays are slightly concave, and the surface ornaments are made to correspond. Fig. 10 is the largest he has obtained or seen. It is quite thick, has 12 embossed rays, and the surface is neatly adorned. The full width is over 3¼ inches. This fine ornament belonged to Chief Abram La Fort, or *Te-hat-kah-tous,* who died in 1848. Fig. 15 has 12 embossed rays and neat surface decorations. Fig. 49 is also from Onondaga, and has 12 short rays. This belonged to Miss Remington, once employed in mission work there.

Fig. 11 is a small star in the writer's collection, sent him by Dr C. B. Tweedale, and which was found in a grave in Huron county, Ont., Canada. It has a plain surface and eight embossed rays. The writer has many drawings of Canadian brooches, some very fine, but they do not differ essentially from those of New York, where many of them were probably made.

Fig. 12 is a small and plain star of 12 rays, which the writer had from the Allegany reservation. Fig. 16 is a fine star from the same reservation. It has 14 quite short embossed rays. Fig. 13 is a fine star with eight broad rays and bosses, belonging to the Buffalo Historical Society. Fig. 14 is in the Richmond collection and is quite peculiar. The central perforation is quite large, and the 12 long rays terminate in circular points, which are not embossed. The surface decoration is simple. This is one of a number of Seneca brooches in this collection.

Mrs Harriet Maxwell Converse secured a large and interesting collection of brooches, part of which now belongs to the State. The writer is indebted to her for figures of many of these, a number of which will be used in this paper. Fig. 22 is a large circular brooch, with a plain rim and an included star with embossed points. Both the dark and light spaces in the figure show perforations. The star has 12 rays. This fine brooch is of a rare type. The three following are also Mrs Converse's. Fig. 32 is large and circular. The 16 projecting bosses have incurved edges between them, and the slightly convex surface is finely ornamented with perforations and tracery. The circular brooches have raised centers as a rule. Fig. 48 is a very pretty and peculiar brooch. Included in the edge are 16 very small bosses, with convex edges between them. The perforations are of an unusual form, and the tracery of a rare character. Fig. 61 has a broadly undulated edge, and the border decoration is not of a common type. Mrs Converse died Nov. 18, 1903.

Fig. 18 the writer obtained at Onondaga. It has 24 projecting bosses on the plain circular edge. There are circular, semicircular and elliptic perforations and some tracery. About two dozen follow which the writer had from the same place. All which succeed are circular till otherwise distinguished.

Fig. 27 has a crenulated edge and three rows of nearly semicircular perforations. Fig. 29 has a similar border, and semicircular, elliptic and triangular openings. Fig. 33 has the same edge, two rows of semicircular and one of elliptic perforations. Fig. 34 is large and fine, with a broadly crenulated border. Besides the large central one, the perforations are semicircles, rectangles, hearts and triangles. Fig. 34*a* is of good size, with a crenulated border, and three rows of semicircular openings. Fig. 39 is a handsome brooch, with 16 small bosses at the intersection of the crenulations in the border. There are three lines of semicircular openings, and another of quadrilateral forms. Fig. 41 has small bosses closely set around the rim, and is of small size. All the perforations are angular, and nearly or quite quadrilateral. Fig. 42 is much like the last but in every way smaller. The central aperture corresponds with that, but the four openings outside of this are semicircular.

Fig. 43 has the frequent crenulated edge, a line of semicircular, and another of elliptic openings, but between each of the last is a small boss, amounting to six in all. They are rarely found in this position. Fig. 50 is a very pretty but small brooch, with crenulated border. The perforations are elliptic and point to the center. Fig. 53 is small, and has small bosses closely set around the edge. The perforations are elliptic and triangular, and the tracery of unusual design. Fig. 54 is large, with broad crenulations. The openings are two lines of semicircles and one of long triangles. Fig. 58 has a plain edge, with bosses projecting all around it. The apertures form a single line of semicircles. It is a simple but very handsome ornament.

Fig. 59 is a very simple style, with crenulated edge and one row of semicircular apertures. Fig. 60 has the same edge, with a line of semicircular openings and another of hearts and circles. Fig. 63 is a small but showy brooch. Medium sized bosses intersect the angles of the crenulated edge. The apertures are semicircles, ellipses and triangles. Fig. 64 has a crenulated edge, a line of crescents, and another of ellipses. Fig. 65 differs from the last in tracery, and in having an inner circle of stars. Fig. 67 has a crenulated border, and for apertures semicircles, ellipses and triangles. Fig. 68 has broader crenulations than most, and two lines of semicircular apertures.

Fig. 69 is very simple but effective. The crenulations are of moderate width, but halfway to the central aperture is a line of eight large circular openings. Fig. 77 is one of the plainest kind. The edge is simple, and a star appears in tracery on the otherwise plain surface. Fig. 79 is a pretty brooch with broadly undulated edge. There are eight pyriform apertures, but the graceful tracery gives a pleasant effect. Fig. 89 is of unusual character. Small bosses appear at intervals around the otherwise plain edge, and there is a circle of apertures of the indented shield form. The surface decorations are small circles and dots.

After the above was in print the writer obtained a fine circular brooch 4¼ inches across, but not as heavy as the La Fort star. It has 23 obtuse points, two rows of diamond perforations, a row of shield form apertures, and delicate tracery. It came from the Senecas. Some others have been noted but not figured here.

Besides his own circular brooches from Onondaga, selected above, the writer has figured many in the hands of Indians there, or in those of friends who have since parted with them. Some of these will follow, simply credited to Onondaga. Fig. 26 is a fine example of these. It has large bosses on the edge, with double crenulations between them; inside of the border is a line of cordate and triangular apertures, with openings between these and the heart-shaped opening in the center. Fig. 28 is another large brooch with crenulated edges and many perforations. A double row of these, of triangular form, gives the effect of a central star. Fig. 30 is about half the diameter of the last, and has the common crenulated edge. The apertures are lines of crescents, circles and triangles.

Fig. 36 is quite small, and has a crenulated edge. The only decoration is a line of small circles on the surface. Fig. 40 has broad crenulations. The apertures are semicircular and quadrilateral. Fig. 45 has also broad crenulations. One line of ellipses is parallel with the edge; the others point to the center. This has less tracery than the last. Fig. 57 is a rare form. Every third crenulation slightly projects, giving the border an angular appearance, and there are six circular apertures besides the central one. The tracery is tasteful. Fig. 76 has a crenulated border and a line of elliptic apertures.

Fig. 80 is small, but of an unusual design. The border is crenulated, and within are alternate crescent and cordate apertures, four of each, the latter pointing to the edge.

The following, in the writer's collection, come from the Allegany reservation. They are circular, but others from that place are of other forms. Fig. 52 has the broad crenulations finely serrated, a rare feature. There are lines of semicircular, pyriform and very small circular apertures. Fig. 70 has a crenulated border, and two lines of semicircular openings within.

Some other Allegany circular brooches follow. Fig. 51 is a small brooch with crenulated edges. The apertures are crescent and pyriform. Fig. 66 is a very pretty example. The crenulations are alternately long and short, and the perforations are semicircular and triangular. The central aperture is angular, and the tracery adds much to the beauty of this ornament. Fig. 71 is unique. There are eight short projecting points united by curved edges, and two lines of diamond form apertures. Fig. 75 has a plain rim and eight triangular openings. The effect is that of an included star. Fig. 81 has a broadly undulating edge, and a line of elliptic openings pointing to the center. Fig. 84 has a finely crenulated border and a circle of small bosses within this. All the openings, including the central one, are quadrilateral. This is a rare feature in a circular brooch.

The following are in the Buffalo collection. Fig. 37 has broadly crenulated edges, with an inner line of semicircular openings. Within this is another line of six elliptic apertures, alternating with those which may be called cuneiform. The tracery is of small circles and arrow points. Fig. 44 has a crenulated border and a line of triangular openings. An inner line of crescents and delicate tracery adds much to the effect. Fig. 47 has a crenulated edge, and lines of crescent and elliptic openings. Fig. 58*a* is crenulated, and the apertures are cordate and elliptic. It is a very pretty brooch.

The writer secured a number on the Tonawanda reservation, but there was but little variety among them. Fig. 62 is one of these. It has a plain rim, but the single line of semicircular openings gives a starlike appearance to the center. Fig. 82 has very prominent crenulations, and lines of crescent, elliptic and triangular openings. There are many like this.

Three Seneca circular brooches are shown from the Richmond collection. Fig. 56 has a close line of small bosses along the border, and there are four long quadrilateral openings toward the central one, which is both large and angular. Fig. 72 has a similar line of bosses. The apertures are elliptic and triangular. Fig. 78 has a simple rim, and the only aperture is the central one. On the surface are triangles and other tracery.

Fig. 199 is taken from a figure by L. H. Morgan, showing a circular brooch of what is now a very extreme size. The apertures are a line of ellipses, one of large and one of small triangles.

Fig. 55 was not mentioned among Mrs Converse's circular brooches. The border is broadly crenulated, and 13 cordate apertures point to the center. Surface tracery unites some of the hearts so as to form a six pointed star. Her collection comprises some of the rarest forms now to be obtained, and these will successively follow, except the Masonic forms. The localities are unimportant and will be omitted.

Fig. 92 is grotesque and involved. There are animal heads at two opposite angles, of no very certain species. The artist may have had some native kind in mind, but the surface decoration might suggest the leopard and tiger. A grotesque face protrudes beyond the point of the buckle, which probably amused the red man greatly. Of course heraldic meanings might be attached to every point, adding greatly to its poetic charms, but without awakening any response in the mind of the Indian wearer. Fig. 99 shows an eagle with broadly expanded and conventional tail. One wing is naturally raised, the other conventionally, and considerable ornament is added. This should be dated since the rise of the American republic. Fig. 155 has its counterpart in the Toronto collection; and the writer is inclined to think it an extremely conventionalized variant of the preceding, as may appear by reversing it.

Mrs Converse kindly sent her own interpretation of these brooches, which is much more tasteful and poetic than the prosaic views of the writer, and will be gladly received by those fond of recondite studies. Of fig. 92 she says:

> This is the most curious and ingenious form. I have never seen a duplicate of this brooch. It symbolizes the totems, or family union and the man, including the story of their warrior ancestors, and tells the story of the union of the Wolf and Bear. The upper figurehead represents the Bear. The lower, the Wolf, united by a human face, signifying the head of the family. The figure of the Wolf terminates in the war club. The Bear holds the war club, and the pin or buckle unites the two. The Bear chief had married the Wolf woman. Both descended from sachems or head chiefs. Fig. 99 represents a combination of the great Eagle, guardian of the dews and war, or sky and earth. At the spread of the tail the small winged symbols indicate his duty in the air. The flat half circles tell the sign of his earth or war office. The simplest brooch is not an accident of the graver's tool. Each stroke is a symbol in hieroglyphs, understood by the expert sign-reader. Fig. 155 is rare, inasmuch as the design is not common. It is the symbol of the warrior. One end forms the tomahawk, the other a war club.

Fig. 86 may be called either pyriform or cordate, the central aperture being the latter, while the opening above changes the general design to the pyriform. There are basal projections, and those at the top suggest the general figure of a crown. The surface is plain. Mrs Converse considers some of the figures above the cordate forms as owls' heads, taking these for emblems of silence and secrecy. This one she describes as a "heart. Owl defined by the open mouth only. Eyes closed." Fig. 87 she calls "very rare. Finely engraved." The writer has seen but one resembling this, and that was by no means as elaborate and fine. The general form is that of a heart with a coronet above, but with unusual surface decoration.

Fig. 95 is another unique brooch, with several half circular projections, and a fanlike ornament above, which may be a variation of the more common form of the crown, surmounting the open heart below. This general plan appears in very many brooches, with endless changes. Mrs Converse thought, this "represents the flaring tail of a bird, yet the heart is on guard in the center. Evidently a totem bird." Fig. 100 is also unique. Both heart and crown are much conventionalized, and the point of the former is turned to one side and projects beyond the center.

Fig. 136 is cordate, with the base curving to one side. The crown above is hardly recognizable as such at first, and is much ornamented. Mrs Converse described this as " a single heart, surmounted by the horns of a chief, typical of the faithful love of whoever presented it to the chief or sachem." It is a rather frequent form. Fig. 146 is a fine example of the simple heart with an elegant form of the crown. Mrs Converse's interpretation is ingenious: " Horned or chief's brooch; the three branches denote three chiefs in family succession." The triple character of the crown appears in nearly all, there being a small central projection with a broader one on each side. In rare instances there are more.

Fig. 148 has the heart and crown, the former turning aside and ending in an eagle's head. The definition of the owner is pretty: " The eagle defending the life or heart of its owner." A great many of the single or double heart brooches end with eagles' heads, and come within the era of the American republic. It would be easy to interpret them as meaning that the crown or royal rule, through the heart's blood of the colonists freely shed, terminated in the republic whose symbol is the eagle.

Some of the writer's Onondaga brooches will follow. Fig. 94 is fine and perhaps unique. It has the crown and heart form, with the point turned to one side. The crown has no points, and includes a cordate perforation in its center, surrounded by other forms. Its large size allowed more surface decoration than is usual in these. Fig. 96 may be called a double heart, surmounted by a crown in which are several cordate apertures. The basal terminations are two eagles' heads. A friend had one from the Oneida Indians precisely like this, and it is by no means a rare form. Several of the same class are in the writer's collection. Fig. 101 is a little smaller than the last, and the apertures in the crown are crescents and quadrants. It is like one owned by Mrs Converse, of which she wrote: " Rare. A crown terminating with double eagle-headed snake. This serpent has a power over the land and sea. The wavy lines signifying water, the long or land line, and two dots signify day, sun and moon, or the journey, the rest and the start." This does not agree with the interpretation of fig. 148.

Fig. 105 can hardly be considered Indian work, though obtained from an Onondaga. There is the familiar heart, with some worn ornament at the end, but the pelican above shows a white man's taste and thought. As far as known, it is unique. Fig. 147 is a fine cordate brooch, with a crown resembling in a general way that in fig. 146, but of a more elegant design. This has a little surface decoration. Fig. 149 is cordate, with another form of crown, where circles replace the frequent points. Fig. 151 is cordate, and has the rounded crown with basal points. Several of these differ little except in the apertures.

Some belonging to Onondagas follow. Fig. 83 is a large brooch formerly worn by Aunt Susannah. It is of a kite or diamond shape, with ornamental edges and tracery. Fig. 102 has a generally cordate form and a suggestion of the crown above. It is quite a departure from the typical form, but the resemblance will at once be seen, as in other cases. There are projections at the sides and base. Fig. 103 has much the same character, but has tracery and circular apertures. Fig. 104 is intermediate between these two.

Fig. 137 has the heart with a conventional and elaborate crown. The base curves to one side, and an eagle's head may have worn away. Fig. 140 the writer had from Onondaga. In the center of the crown and on either side are sharp projections. Mrs Converse thought these crowns with apertures were intended for owls' heads, to which they bear a curious resemblance.

Some Tuscarora forms of this class follow. Fig. 93 is of a general diamond form, with undulating edges and four bosses in the margin. There are several apertures and some tracery. Fig. 150 is quite broad for its size, and is a double heart surmounted by a low crown. The basal point curves to one side.

The following illustrations of this class are of brooches from the Allegany reservation. Fig. 97 is a very simple cordate example, with the base turned to one side. The metal forms a narrow band all around the broad aperture. Fig. 141 has the frequent combination of heart and crown, the latter having sharp projections on each side, three circular apertures in the crown, and some surface decoration. Usually the lower aperture has a double curve, to emphasize the cordate form. Fig. 142 has the feature mentioned, but is otherwise much like the last. Fig. 143 differs in having a projection in the upper circles, thus giving each of those apertures a crescent form. Fig. 145 has the heart with the point turned to one side, and the highly conventionalized crown. Like fig. 137, the latter has no central projection. The surface is covered with tracery.

Fig. 138 is in the Richmond collection, and is a rare form of the heart and crown brooch. Both lower sides have strong cross corrugations, and the crown has a finely crenulated border, as well as the frequent three projections. In the crown are four circular apertures.

Two are shown from the Cattaraugus reservation. Fig. 139 has the usual combination of heart and crown, the two upper apertures having the crescent form. Fig. 144 is one of the neatest examples the writer has seen. The apertures are so formed as to bring out the outlines in the most graceful way.

Fig. 98 is a remarkable Tuscarora brooch, linking this type to the common lyre forms, not long since so abundant. It is large, and has the usual lyre base and sides, but, instead of expanding, it contracts at the top as in cordate forms. Fig. 125 is another small and odd Tuscarora brooch, which is somewhat contracted at the top, and unusually expanded at the base, where there is a short projection on each side.

Fig. 128 is a large lyre-shaped brooch in Mrs Converse's collection, on which she makes this note: "Uncommon. Found in Canada. Two hearts surmounted by a crown, symbolizing friendship." This one is unusually large, but the general type is one of the commonest on the New York reservations. The writer has seen large numbers of them; and, when Major F. H. Furniss was adopted by the Senecas in 1885, his future Seneca mother placed a long black ribbon around his neck, on which were 34 silver brooches of what the writer calls the lyre pattern. This had belonged to Red Jacket's wife, according to tradition. The necklace was considerably over three feet long, and the brooches were about an inch long and ¾ of an inch wide. The original string had been divided some years before, and 15 of the brooches had been arranged on a ribbon in the form of a cross. This was given to Mrs Converse, who was adopted at the same time. The natural inference is that she referred to the size rather than form. Fig. 132 is also hers, but it is smaller and the base is different. It will be observed that what she considers the top of some of these the writer makes the base, thus changing the character.

Fig. 127 is the common size, and the writer had this from the Allegany reservation. It differs from the next mainly in the rounded points and small details of decoration. Fig. 129 was obtained from the same source. Fig. 130 the writer got of the Onondagas. It is slender for so large a size. Fig. 133, obtained with the next at the same place, is also slender and has rounded points. Fig. 131 is a large size, and has a remarkably angular base.

The class of brooches now to be illustrated by a few examples out of very many, is a very curious one, and definitely proves that ornament and not meaning was the great object in the manufacture and use of all. These ornaments, now to be considered, embody the square and compasses, with more or less accessories in the way of decoration, and sometimes these are highly conventionalized. The origin is plain when the resemblance is almost lost and this loss has led to some erroneous interpretations.

A friend writes:

> I fail to find in illustrations of jewelry ornamentation of either the French, English or Dutch, designs that have been actually followed in the hammered coin brooch of the Iroquois. In fact, I credit him with entire originality, very curious in some cases, and again there are suggestions of the white man's work ingeniously intergraven with his own conceptions of art not so rude or savage, that it has not developed genius and invention.

This question will not be discussed now; but it is true that the designs of Indian brooches for the most part seem American designs. It is very difficult—perhaps impossible—to find these designs practically anticipated in any other land. So much the writer had reason to believe. Then came a revelation concerning these Masonic brooches, too many for Indians to use with any reference to their meaning. All these illustrations had been prepared, and work was progressing on these notes, when one day came a catalogue of curios from England, *The Amateur Trader* of Miss Clara Millard, Teddington, Middlesex. No. 4188 of this had an illustration which was the close counterpart of fig. 110 in size, form and details. The description is "XVII. CENTURY masonic emblem, in jargoons and paste. Exact size. £2 12s 6d." Was the Indian silver brooch copied from this, or this from the brooch? The same question might be asked of other forms. The silver brooch of the Indians did not exist in the 17th century, and the age of the above ornament may also be doubted.

After this was in print a learned German friend pointed out to the writer several brooches of what he said were Scandinavian and other types in his collection, but there has been no time to study the subject, and illustrations of this are not now recalled.

Out of a large number of these Masonic brooches, over a score have been selected for illustration, in themselves far more in number than all the Indian Free Masons known. Joseph Brant was a well known member of the fraternity, and Red Jacket has been claimed. There may have been a few others, but these were common ornaments. The writer has nine still in his collection, after parting with some to his friends. He might easily at one time have trebled the number. This abundance is proof that they had no significance to most of their wearers.

Fig. 124 was the first of these that attracted the writer's attention, and it now belongs to the Masonic Veterans of Central New York. The base is a half circle with ornaments, and above this the square and compasses are plainly seen. This was long worn by Aunt Dinah, a very old Onondaga woman. Traditionally it first came from Brant's family to her, and was naturally supposed to be a jewel worn by him. Now that the form is known to be so common, this may be doubted.

Several examples follow from Mrs Converse's fine collection. Fig. 108 adds many things to the simpler form, which is easily detected under these accumulated ornaments. Several fine bosses add to its effect. The forms of apertures used in this appear in several others. Fig. 110 is a smaller and simpler form, almost identical with the English one mentioned except in material. Like that, it has a curved base, and the sun and moon between this and the square. Another interesting thing in connection with this is mentioned by Mrs Converse. She said: "It was given me by the grandson of Red Jacket. It proved from that Red Jacket was a Mason, and wore this brooch for pass. In further investigation, while working at the Red Jacket monument at Buffalo, I heard of a man who had sat in a lodge with the great Sa-go-ye-wat-ha." The brooch hardly proves this, the other evidence is hearsay, but, if Red Jacket was a member of the craft, it would appear on some of its records. He was too well known to be easily overlooked in such a matter.

Fig. 113 is smaller and less elegant, but has the same features in a more conventional way. Fig. 117 is larger and more elaborate. Fig. 119 is one of the simplest forms, having but two apertures, but these are large. The surface is covered with tracery. Fig. 120 is quite conventional, but the leading features of other forms are readily detected. Fig. 126 is simple, with but little surface decoration.

Fig. 109 is a Seneca brooch, differing from some other elaborate ones only in minor details. This has six bosses, which are smaller than in most others. This and the next are in the Richmond collection. Fig. 114 is a large and quite frequent form with many accessories. By omitting the outside loops the design would become much like those of a simpler and more distinct character, a fact easily tested. Fig. 106 shows a fine example from the Tuscarora reservation, having 15 large and small bosses. On either side, at the top are angular projections, terminating in embossed ends. These adjuncts belong to several. Fig. 111 is in the Richmond collection, and presents the feature mentioned in a less common way.

Fig. 116 is in the Buffalo collection, and is one of the rarest of these small forms, as well as one of the most beautiful. Did it stand alone, its character might not be understood, but in a series this is evident. The base has a border of small bosses, except in the middle, and the lateral projecting points at the top are terminated by others. The tracery adds some peculiar features to the design.

What was said of the character of the last seems partially true of the Tuscarora brooch in fig. 122. Its Masonic character is extremely obscure taken by itself, but a comparison with others on the same plate reveals a strong likeness to them.

Fig. 112 shows a very fine embossed brooch at Onondaga, having projections at the base. All vary in details and somewhat in outline. The simpler forms have a uniformly curved base; others add various ornaments.

The remaining illustrations of this class are from the writer's collection. They are usually large and have been quite abundant. Fig. 118 is highly conventional, but otherwise quite plain. Fig. 107 is the smallest that has met the writer's eye. It is embossed, and has the general character of some of the larger forms, but the base has a series of broad curves between the bosses. Both these are from Onondaga, and all but one of those which follow. Fig. 115 is a frequent and rather plain form, with some conventional features. The writer obtained four of these out of a number like them. Fig. 121 shows the original features of the class more plainly, and is very neat in design and finish. The base is a simple curve. Fig. 123 adds the interior bars found in several others, and has projections at the base. Fig. 152 was obtained at Cattaraugus, and is an elegant ornament in every way. At the top it has the rare feature of red glass neatly set. Fig. 159 shows one belonging to Mrs Converse, which has a glass setting near the center of the base. It is quite conventional. The glass setting has been observed in very few. So many of this class remain that the numbers must once have been great

One fine and unique article, obtained by the writer from an Onondaga woman, is shown in fig. 223. It is a large silver pendant, with a center of green glass of diamond form. The edges of the pendant are parallel with this, but have broad expansions opposite the angles of the glass, giving it the appearance of an equilateral and massive cross.

A few examples are given of a class once very abundant, and much used for adorning ribbons. They differ very little in outline, but very much in details and size. The figures illustrate the largest and smallest in the writer's collection. They might be called either quadrilateral or octagonal, for the broad angles form four short sides having indentations. The sides proper consist of two bars, concave in outline, uniting so as to form a broader, ornamented surface at each angle. The buckle crosses from point to point. Those represented are all from the Onondaga and Tonawanda reservations. One unique form is not described.

Fig. 164 is the smallest the writer has seen. The angles are ornamented with lines and small circles. Fig. 163 is the largest in his collection, and may be as large as any. The surface ornaments are like the last, but the divisions of the angles are more protuberant than usual. Fig. 161 has surface ornamentation nearly all over. Fig. 162 is plainer. Fig. 165 and 167 have both bars ornamented, but not the angles. They are among the handsomest collected. Fig. 166 is much like these, but the angles are ornamented.

The writer has a few simple silver brooches, which are open and almost as slender as those which are simple rings or round buckles, but they are angular. Fig. 134 shows one of these which is square, but with the angles rounded. The tongue of the buckle reaches from one of these to that opposite. Fig. 135 is a similar one which has the angles indented.

The Onondagas call the brooch *Ah-ten-ha-né-sah,* shining ornament.

Headbands

The silver headband is a long strip of sheet silver, straight on the lower edge but usually with points of some kind on the upper, and with some pretty pattern between. The Onondagas call these *Ta-yone-non-aich-han-hust'-ah.* The whole headdress, which once often included this, was called *Gos-tó-weh* by the Senecas. Part of this, as given by Morgan, but without feathers, is shown in fig. 157. Quite commonly, however, the headband encircled an ordinary hat, and in this way the writer has seen several used by one person, one being placed above another. Usually the wearer had but one, which served as a foundation for other ornaments. They were secured by strings in the holes at the ends.

They are now difficult to obtain. The writer's inquiries on several reservations have been unsuccessful, nor can they now be found among the Iroquois of Canada. That the State Museum has now several of these rare articles is due to the intelligent zeal of Mrs H. M. Converse, whose opportunities have been exceptionally good, and whose own fine collection of silver ornaments is well known.

Fig. 386 is a Seneca headband drawn by the writer, and reduced from the actual size, like all those which follow. The six others illustrated are in the State Museum, and were carefully drawn there from the objects themselves. They are faithful representations of these.

Fig. 399 is 1¾ inches deep. The upper edge is cut into half circles, inside of each of which is a triangular perforation. Alternating with each of these, below is a line of vertical hearts, cut through the band. Another line of narrow openings is below these. Fluting and tracery elsewhere adorn the surface. Fig. 400 is narrower, and has embossed points on the upper edge. There is a central row of narrow elliptic openings, and some tracery. Fig. 401 has similar points above, narrow elliptic openings below these, and a line of open hearts farther down alternately point toward each other. Fluting and tracery also appear. This is about 1½ inches deep.

Fig. 402 is of the same depth, and has broad crenulated lobes above with tracery following the outline. In the center of the wide lobes are kidney-shaped or broad cordate perforations, pointing upward. Below each of these is an open diamond, cut horizontally and with a boss at each angle. Alternate with these are open hearts pointing upward. Fig. 403 is a narrow and simple band, the only decorations being fluting. Fig. 404 is 1¾ inches deep, and has very broad crenulated lobes above. There is a central line of alternate perforated stars and diamonds, with some fluting and tracery. The state collection of these is a very good representative one, but among those formerly used there must have been a great variety of detail.

Miscellaneous

Some ornaments occur which can not be classified. Fig. 156 is one of these, and was found on Indian hill in Pompey in the year 1901. It is of pewter and is V-shaped, with the angle rounded. There are protruding angular points and bosses. Another of similar character has more the form of a buckle. Broken iron, brass, and pewter buckles are sometimes found.

A handsome ornament of variously colored beads was also plowed up on Indian hill in Pompey the same year. The beads were kept in place by the brass wire on which they were strung. There was a large circle of these, with several pendants of beads attached. In 1902 the writer found there other glass beads, preserved on brass wire.

Fig. 224 is a large open heart of brass wire from Fort Plain. A wire loop is soldered in the angle above. Fig. 225 is a heavy copper pendant, found on the sand plains near Rome N. Y. Of this two views are given. The disk below has a large ring in the heavy loop above. This may have been of the 17th century, or early in the 18th.

Of about the same date is a fine brass ornament in Mr Stanford's collection, 3¼ inches long by 1⅓ wide. The upper half is lyre-shaped and open; the lower open and circular, but with a projection at the base. Both halves form one piece. In the openings hang open, six pointed stars, nearly filling the space. Fig. 395 shows this. It suggests an ornament from harness.

Fig. 285 is from Indian castle in Pompey, and is a flat and narrow piece of brass, rounded on the upper surface and terminating in a trefoil at the broader end. Near that end is an elliptic perforation, which may have been for attachment or suspension, but probably the former. Fig. 380 is a broader article of the same kind, and from the same place. The lobes of the trefoil are rounder, and the perforation is circular, as in most other cases. Still another is from the same place. In every case meeting the writer's eye, the base has been broken.

The Onondaga specimens might have been worn in the hair or attached to the dress, being straight. Mr Stanford's specimens, at Munnsville, require a different view. In two of these, longer than those from Onondaga, the base is abruptly bent upward. Each of these is about 4¼ inches long. A third is of quite a different character, and not far from the same length in a direct line. Two abrupt curves make the actual length much greater. Viewed from the side, it suggests the curved handle of an old-fashioned door-latch, or the handles sometimes used with shawl straps. About the middle of this curve it is nearly ¾ of an inch wide. There can be little doubt that this was an ornamental handle of some kind. The others may have had a secondary use after being broken.

Fig. 286 is a neat little article of brass, found a mile west of Canajoharie. The portion ornamented with cross lines has the outline of a broad trowel, and there is a narrow rectangular base. There are no present means of attachment, and it may once have been longer, though showing no signs of breakage.

Fig. 287 is a slender and angular piece of copper, which is evidently a fragment. Its general form suggests that it may have been one of the tobacco tongs, often given to the Indians. This came from Indian hill in Pompey. A heavier one, of slightly different form, is in the Stanford collection.

One odd relic from a recent Cayuga site is a silver watch seal of considerable size. The handle is in the form of a dolphin, and the seal has crossed arrows between the letters K. M. This might have come among the spoils of war, by gift or purchase. With its Indian owner it was merely a pretty ornament, easily suspended and worn. Such an object would be attractive to any savage mind when plunder was to be had. But nothing that an Indian might carry off need excite surprise. When the Huron towns were destroyed in Canada in 1649 and 1650, and two of the missionaries were killed, the Onondagas carried off two little books belonging to the latter, and Father Le Moyne recovered them at Onondaga in 1654.

Though not ornaments, there are figured here several unique recent copper relics which have been lent the writer at the last moment. They are in form like the old bone needles, flat and perforated, and of interest as a survival of an early form in a later material, like the conical and triangular arrowheads of copper. As nothing of the kind has ever been described before, it seemed best to include them now. These are from Indian hill in Pompey, and they have been reported from no other place. They are about as thick as needles of bone, but rather wider than most of these. Fig. 376 is broad, and is broken at the perforation. Fig. 377 is narrower and has a rounder point. It had two perforations. Fig. 378 is longer, and has a long and narrow hole. Fig. 379 is unperforated, and is pointed at both ends. Such needles have been used in netting snowshoes. These have since been placed in the State Museum. Their age is not far from 250 years, and they are all that the writer has anywhere seen.

Addenda

Since the bulletin on bone articles was prepared, a number of interesting relics have been reported. The finest of these are in the small collections of L. William H. Klinkhart and his friends, in Canajoharie N. Y., and were all found in that vicinity. The writer has examined some of them. One small and broad bone comb has three human heads projecting above the upper rim in a curved line. This is about 1$\frac{3}{8}$ inches high. Another terminates above in a long-bodied quadruped in a standing posture. Below the opening are two human faces. This is more than double the length of the last, being over 3 inches high. It is from Wagner's hollow. Another may be a pin, or part of a comb with a single long and perfect tooth remaining. One tooth certainly has been lost, but the fracture has been repaired, and the part is neatly finished where it might have widened into a comb. The top curves, and two human faces are in the open work below the upper rim, as in the last. This fine article is 3$\frac{5}{8}$ inches high, and came from the Otstungo site. Its importance is in showing the resemblance of some work on this early site to some of clearly historic date.

A human figure of horn has the hands under the chin, and the head is disproportionately large. It is 2$\frac{1}{2}$ inches high and was found at Wagner's hollow. There are the usual awls; perforated beaver and elk teeth, cylindric bone beads, perforated deer phalanges, some of which are fine. The longest awl is over 8 inches in length. One conical bone point has a lateral perforation. This article is over 3 inches long, and came from the recent site in Rice's woods.

One fine bone harpoon has two long barbs on one side, and is perforated. At the broad base are longitudinal grooves, like those on a harpoon of Mr Richmond's from the Mohawk valley, but more and longer. Another of the same length is about half as wide at its plain base. This has two barbs on one side, and on that edge is a projection in which is the perforation. These notable harpoons are each 6$\frac{3}{8}$ inches long, and come from Wagner's hollow, where others have been found.

The occurrence of a much worked *Fulgur carica* on the Cayadutta site is of interest, as marine shells are rare on early Iroquois sites in New York. The base, outer whorl and some projections have been cut away, and a long slit cut in the remainder toward the base. The whole shell shows age. This was found by Mr Percy M. Van Epps of Glenville. In his collection and those of his friends, the writer found many interesting articles, mostly of stone. As the Mohawks had no towns in Schenectady county, pottery is rare there, as well as recent articles.

The Bigelow collection has received a number of the curious ornaments made from the concave and convex ends of bones, pierced for suspension. They are from Pompey sites of the pre-colonial period. One retains traces of red paint. One massive and carved bone bead is from the Christopher site. Mr Bigelow has also recently obtained a fine tube from near Three River Point, and a banner stone from Savannah N. Y. Both are of striped slate. A bayonet slate weapon and a remarkable flattened bird amulet are among his recent additions.

Mr Theodore Stanford, of Munnsville, has a fine cylindric bone arrowhead with barbs, and also a worked bone, about half as thick as wide. This is 3 inches long and an inch wide at the broad end, which is notched all around. Near that end is a lateral perforation. The general form is flat, with rounded edges.

The writer has also examined Mr R. D. Loveland's fine collection in Watertown N. Y., which is rich in clay pipes from neighboring forts. A few have stems fitted to bowls which were found on the same sites and are of the same character. They are not always certainly parts of the same article, though of the same age. Some perfect examples are unique, as well as some imperfect. One of the former, a small clay pipe, is like a high shoe in outline, but much compressed. Dr A. A. Getman has a broken one of similar form. In September 1901, the writer was present when Mr Oren Pomeroy took out of a Jefferson county camp site a fine clay pipe bowl, having a human face before and behind. This form is rare. On the same visit, Dr R. W. Amidon presented him a small clay pipe bowl, perforated for the insertion of a stem.

In the Loveland collection one peculiar long and broad flat awl has deep notches on each edge above the base. Another fine example has been beautifully mottled by fire. A bone arrowhead is one of the remarkable articles in this collection. It is angularly shouldered but not strictly barbed, and has a long and moderately slender perforated tang. Recently Mr Loveland obtained a pipe resembling fig. 220 of the bulletin on earthenware, with several fragments. Three examples of a curious canoe-shaped pipe bowl have also been found by him. Unio shell beads are also now in his collection.

Two articles are of high interest, though simple, and will be illustrated later. They are of carved wood, which fire has charred but not destroyed. With one exception they are probably the oldest remains of this kind in New York.

Several interesting collections have been examined in and about Glenville N. Y., through the kindness of Mr Percy M. Van Epps. In one of these is a woman's knife unfinished, of the red slate of Washington county, showing that it was made not far away.

Several fine bird pipes of stone have been found, one of which is in Col. Camp's collection at Sacketts Harbor, the gem of which is a massive and highly polished stone pipe resembling a flying squirrel. It is 6½ inches long, by 2⅝ broad. He has also a thin and highly polished stone tube. A beautiful shell gorget comes from Savannah N. Y., and is nearly 4 inches across. Other interesting finds will not be mentioned now.

At the last moment a supplementary note seems required. In September 1903 Mr John Mackay, of Niagara Falls, opened an ossuary of the Neutral nation close by the Tuscarora reservation, of the approximate date of 1620. Iron axes and brass kettles were found in this, shell and metallic ornaments, sword blades and pipes, with a few glass beads. The metallic beads were made from strips cut from old kettles and rolled into cylinders, from 2 to 11 inches in length. Of more interest were 24 rude rings of the same material, most of them rolled into cylinders and bent into a circular form. A flat one served for a finger ring and still encircled the finger bone. The others were larger, from ⅞ to 1¾ inches across, some overlapping and some just meeting at the ends. A large one is 2½ inches across, doubled, beaten flat, and then brought into a circle like the rim of a hat. A strip of metal is folded over the ends and also beaten flat.

The writer obtained one unique brooch too late to figure or describe, to which reference has been made on page 94. It may be called of a diamond form, each side being a narrow bar, curved over outside at each end and forming a short hook. It measures 1⅛ by 1½ inches.

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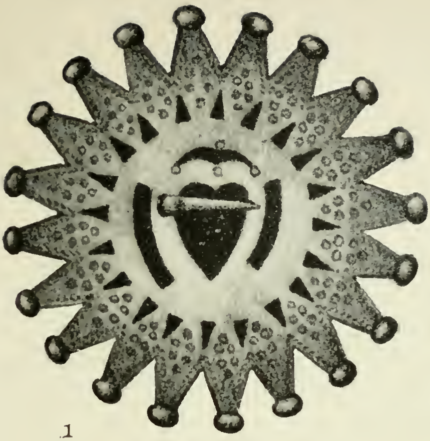
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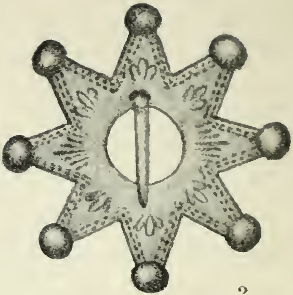
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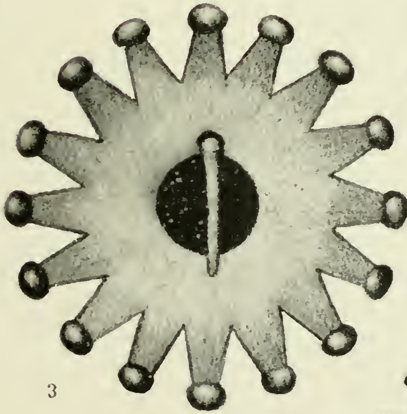
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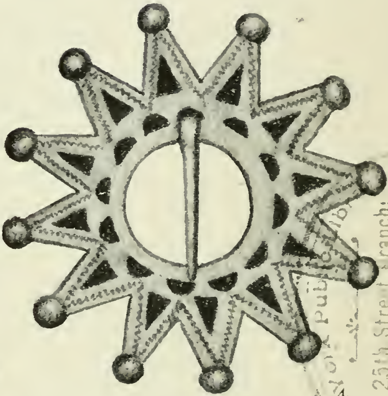
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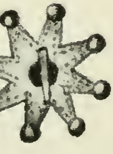
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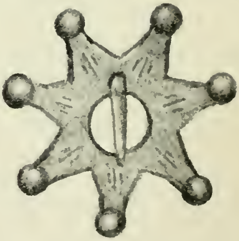
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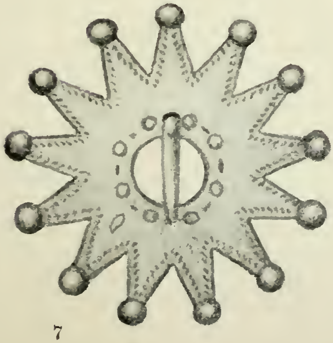
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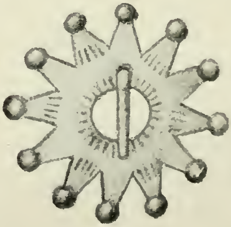
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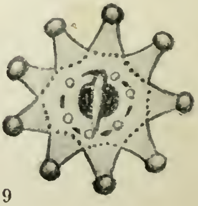
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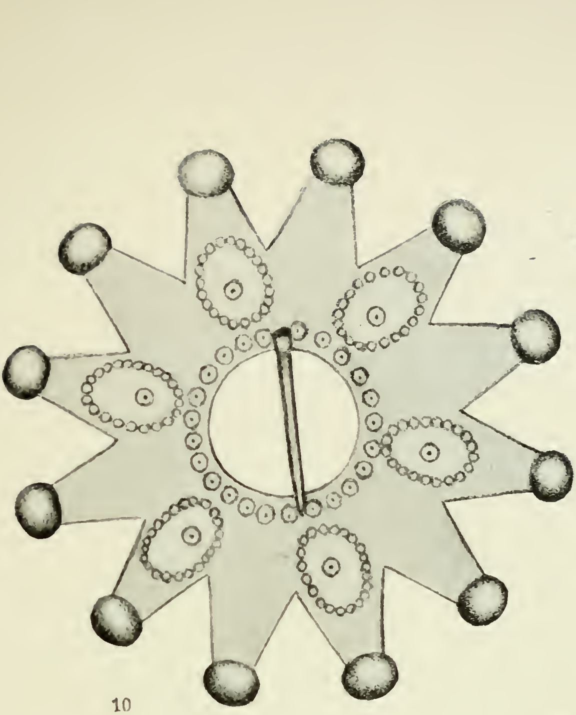
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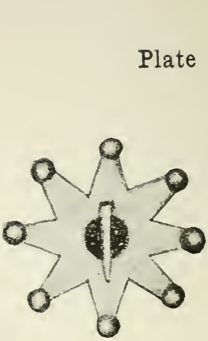
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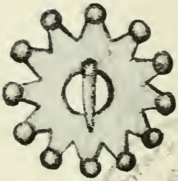
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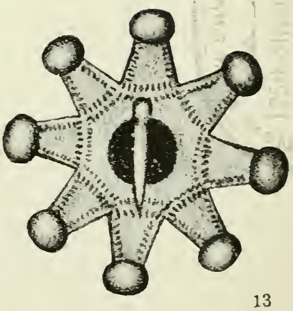
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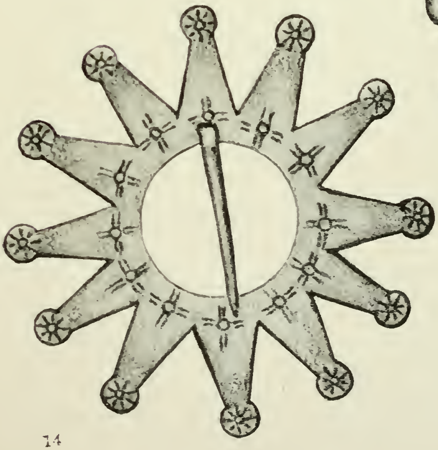
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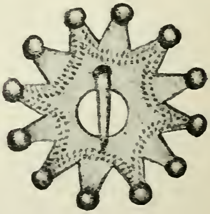
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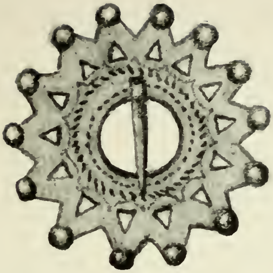
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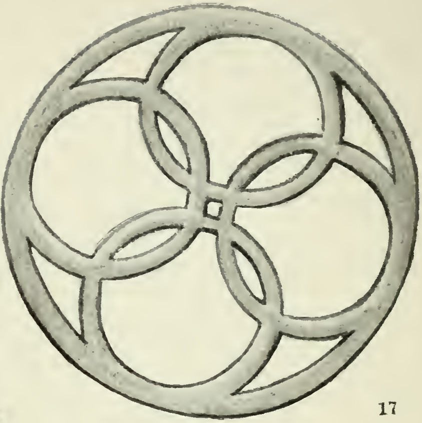
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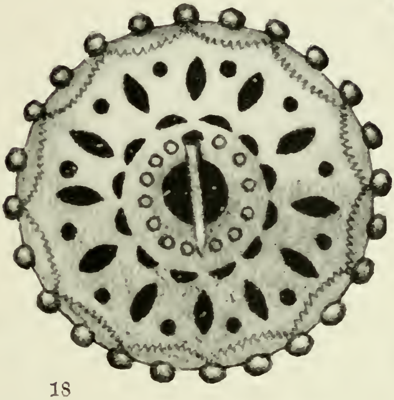
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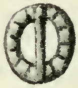
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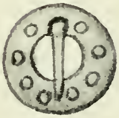
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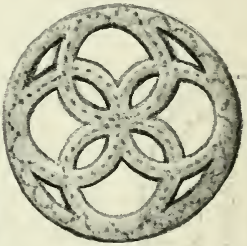
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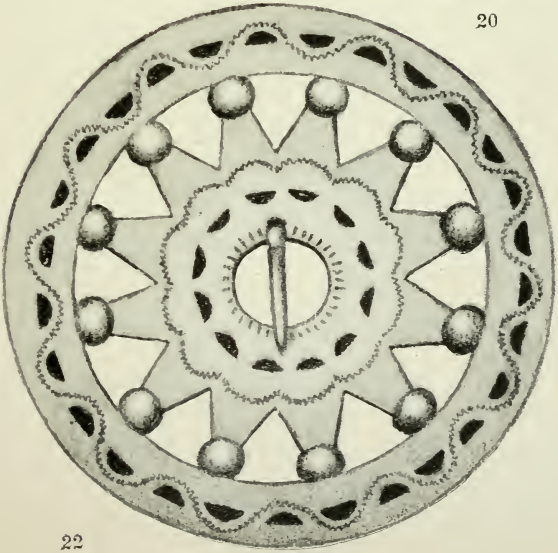
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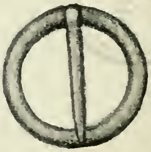
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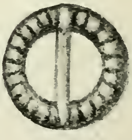
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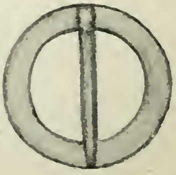
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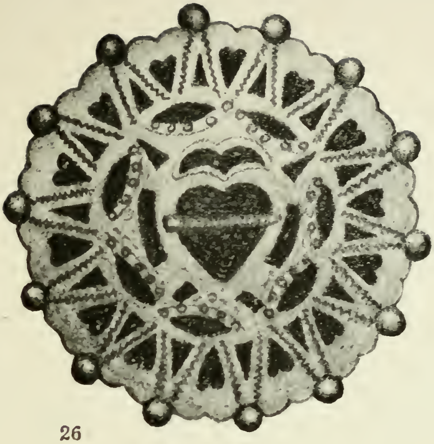
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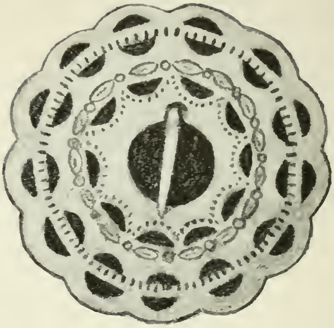
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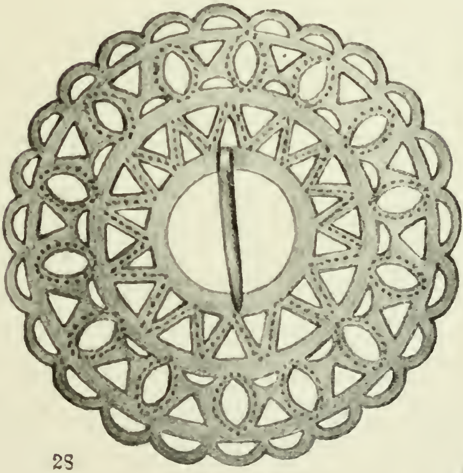
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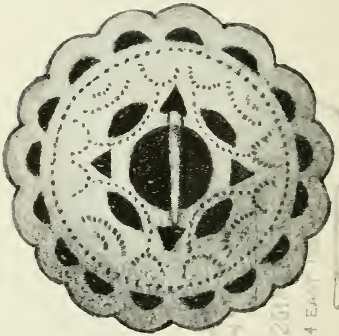
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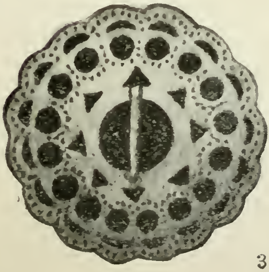
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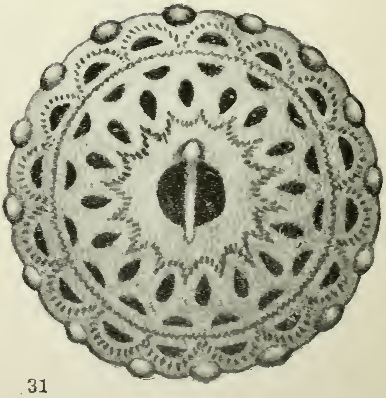
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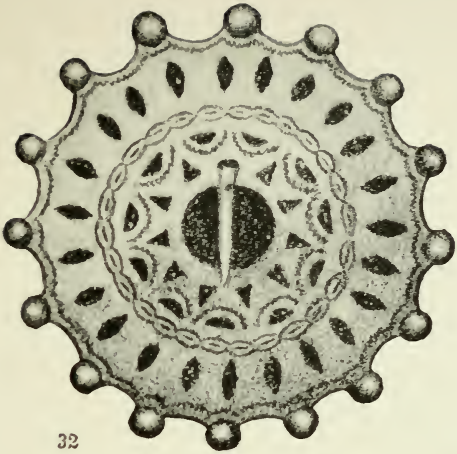
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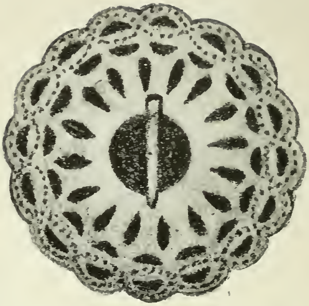
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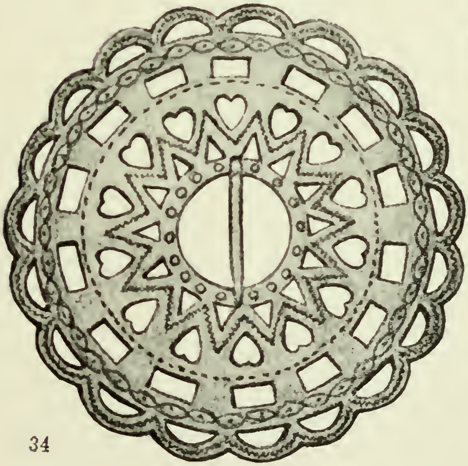
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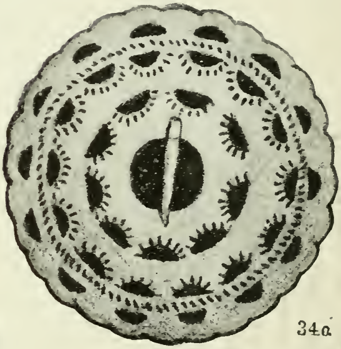
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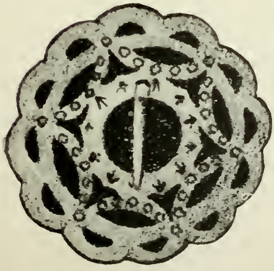
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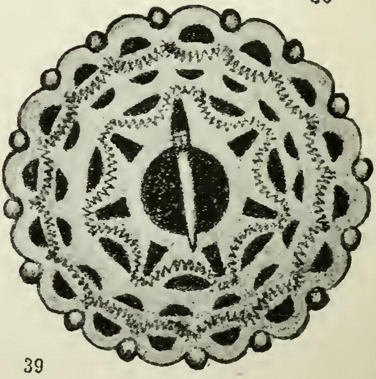
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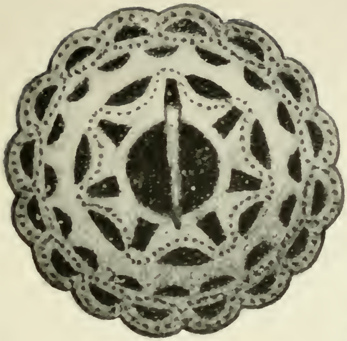
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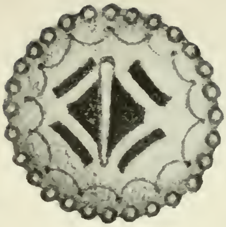
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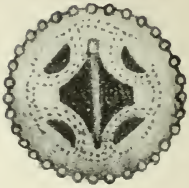
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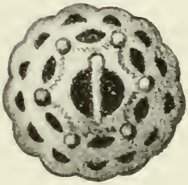
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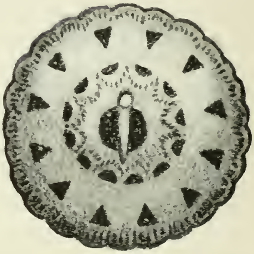
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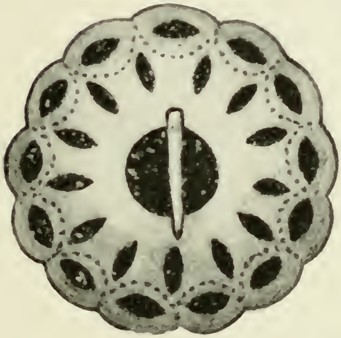
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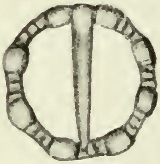
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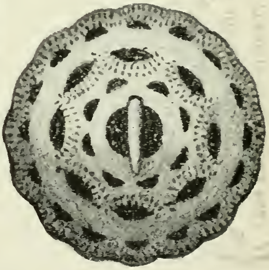
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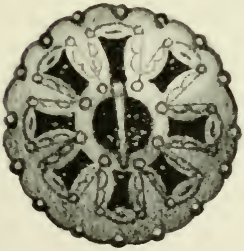
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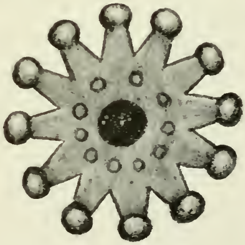
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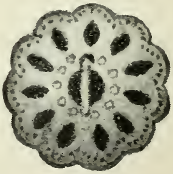
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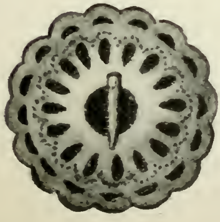
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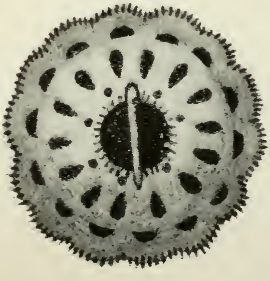
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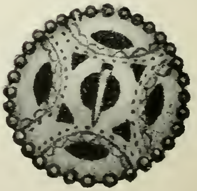
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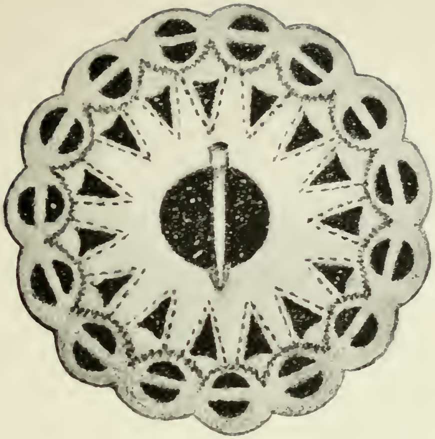

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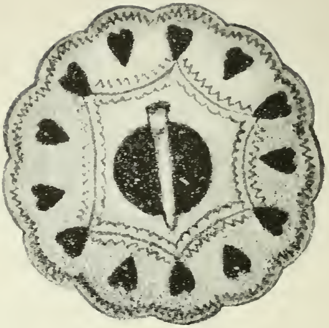

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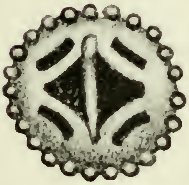

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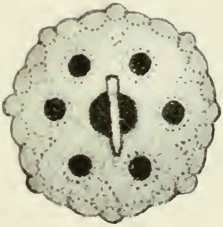

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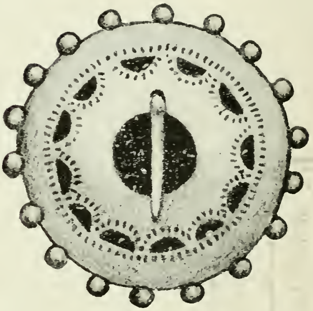

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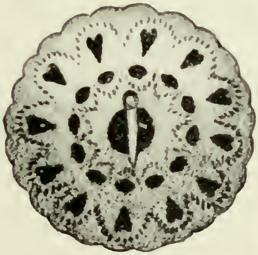

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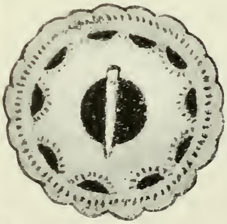

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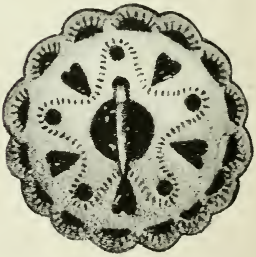

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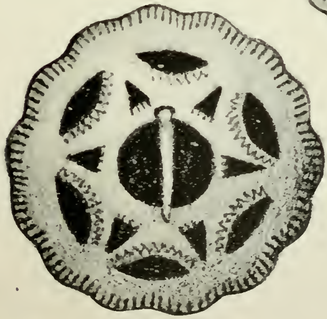

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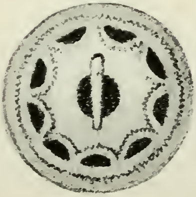

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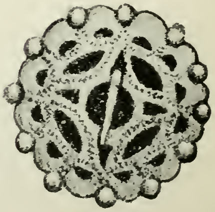

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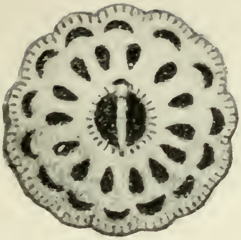
Plate 8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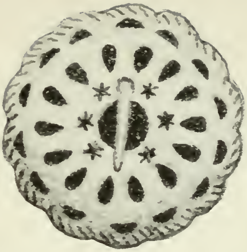
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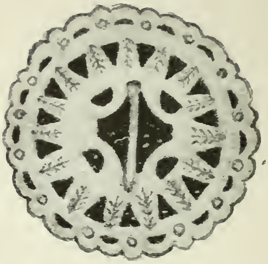
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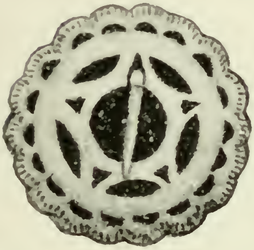
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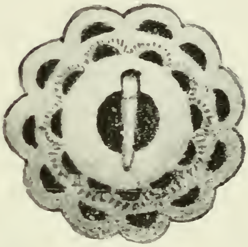
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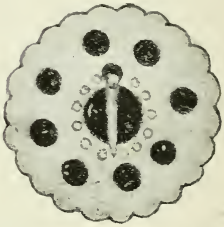
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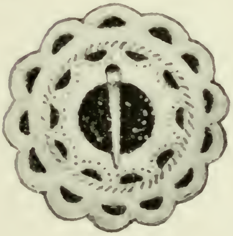
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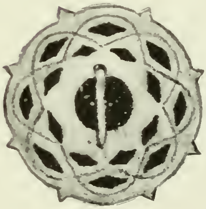
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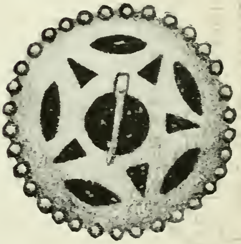
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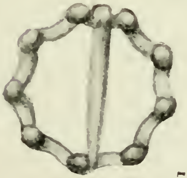
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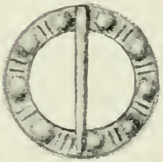
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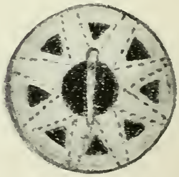
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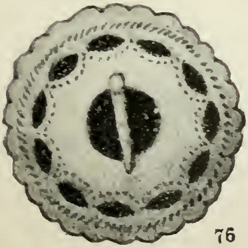
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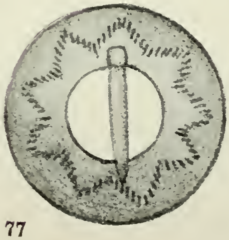
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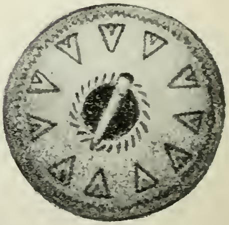
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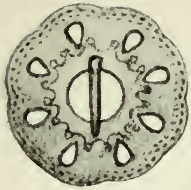
Plate 9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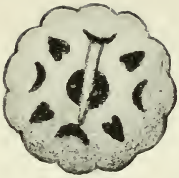
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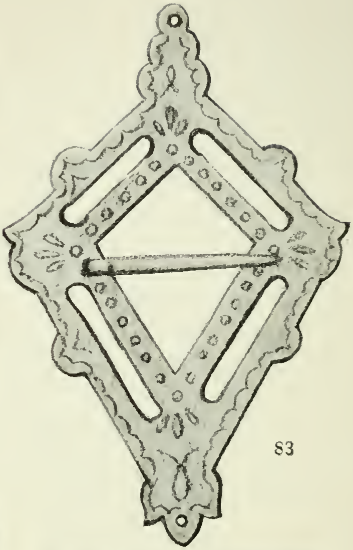
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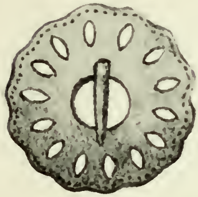
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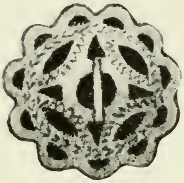
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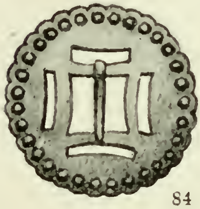
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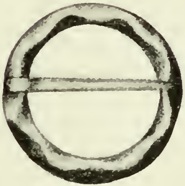
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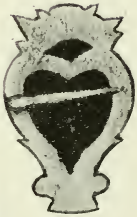
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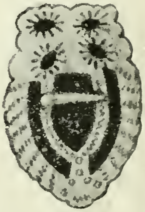
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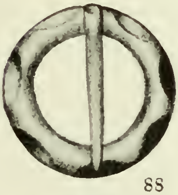
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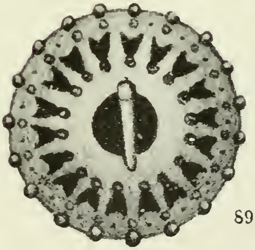
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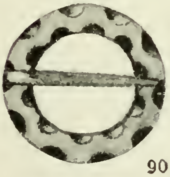
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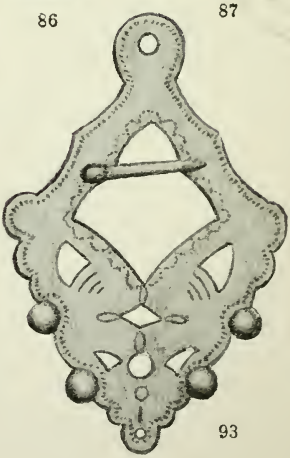
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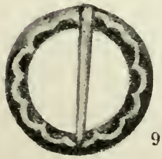
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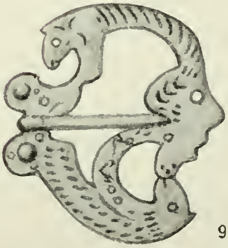
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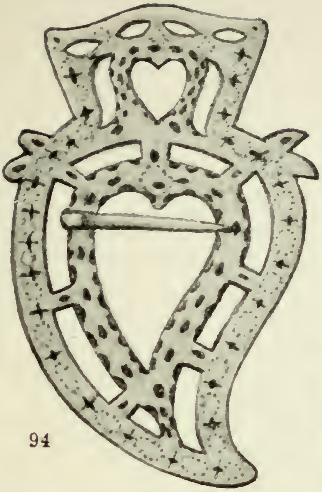
Plate 10



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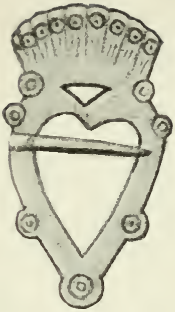

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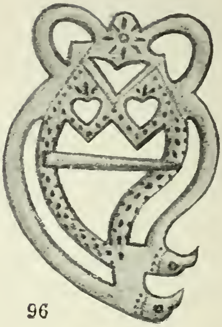

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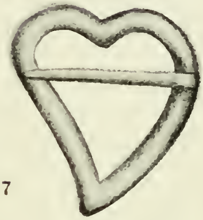

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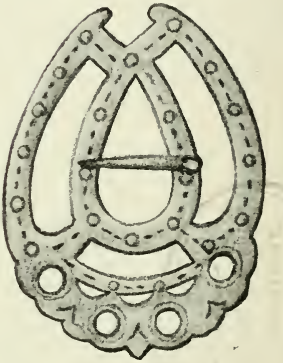

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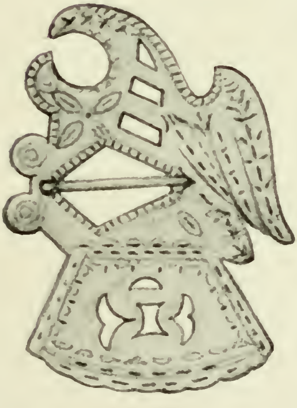

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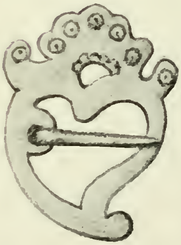

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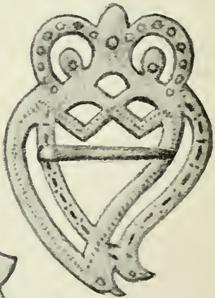

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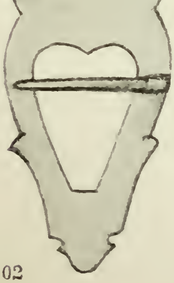

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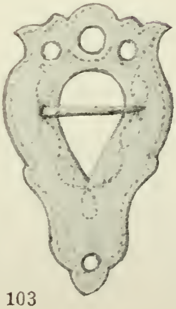

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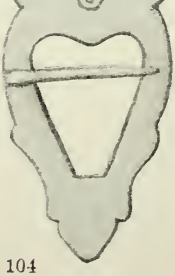

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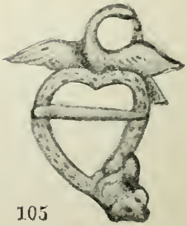

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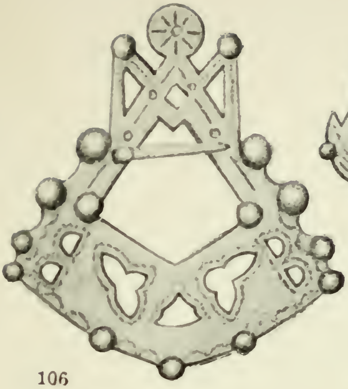
Plate 11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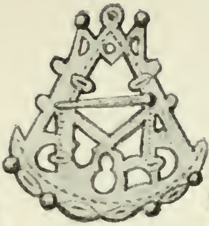
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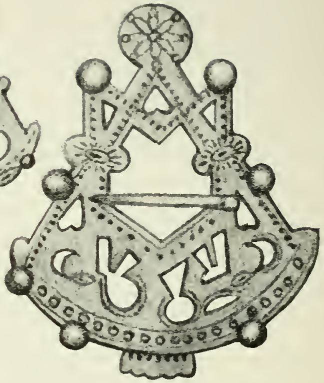
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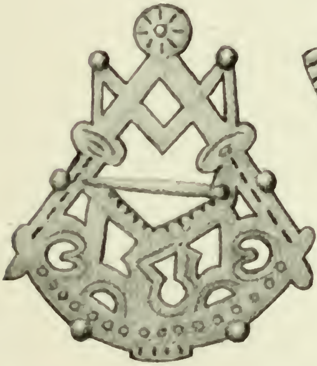
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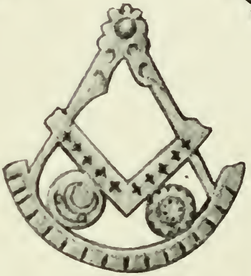
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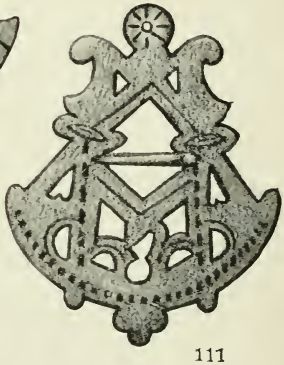
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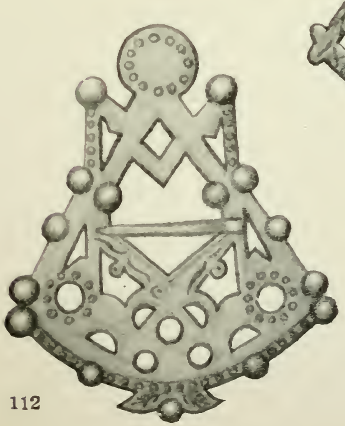
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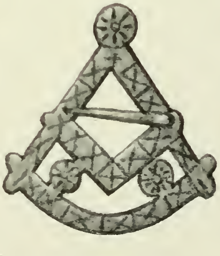
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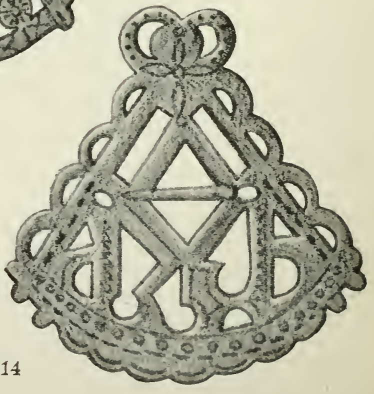
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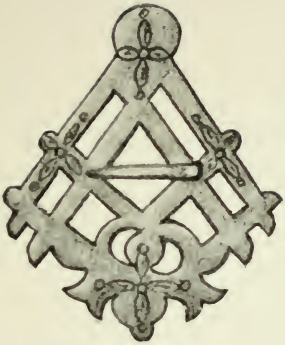

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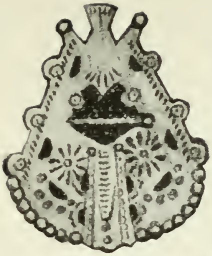

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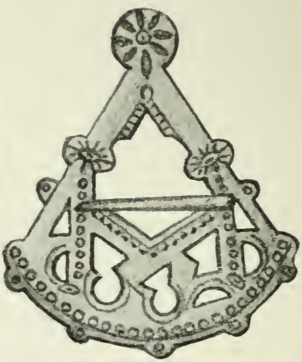

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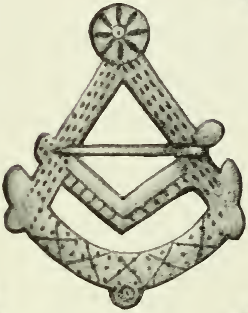

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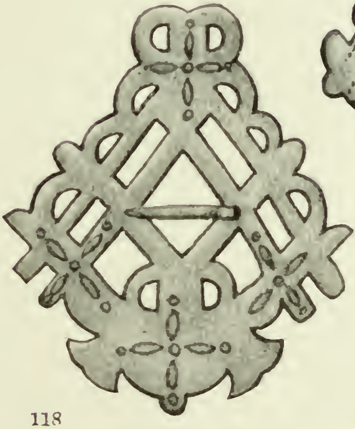

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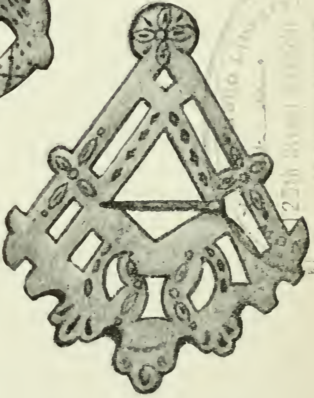

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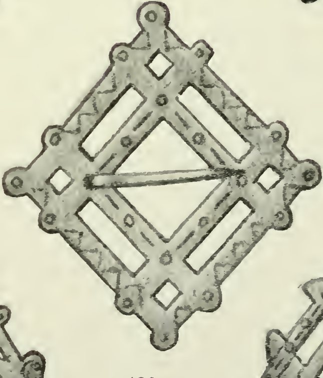

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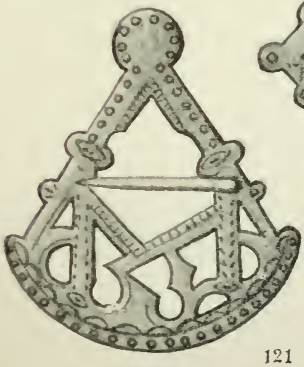

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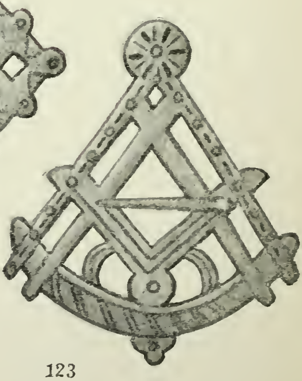

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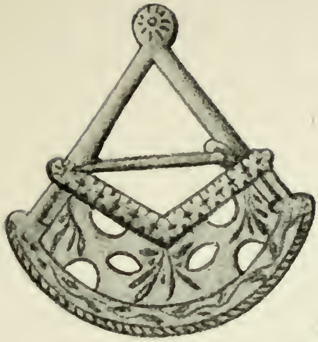
Plate 13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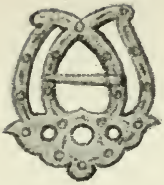
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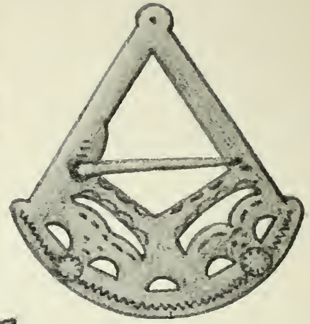
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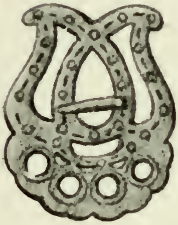
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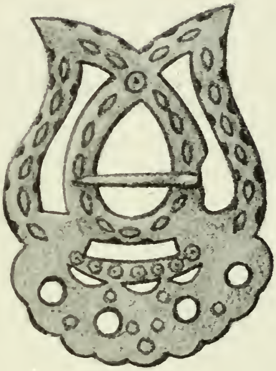
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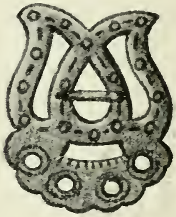
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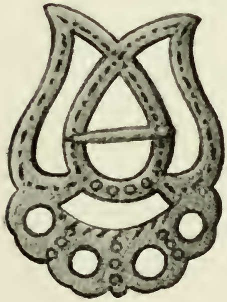
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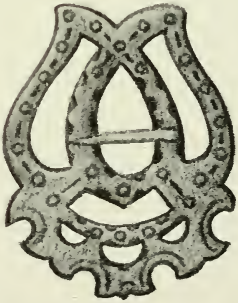
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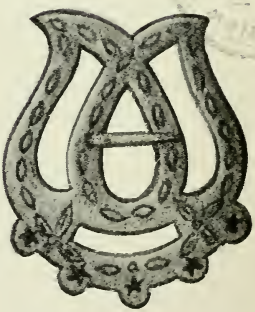
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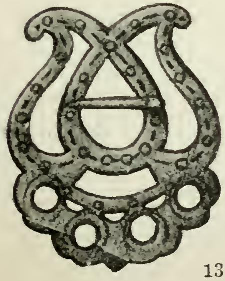
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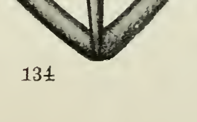
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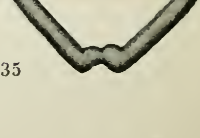
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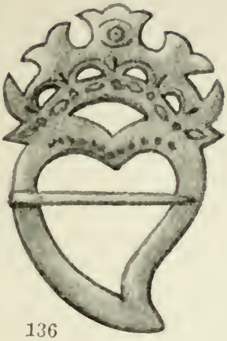
Plate 14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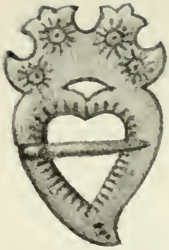
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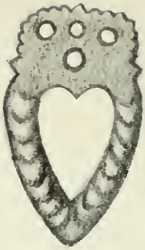
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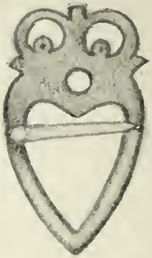
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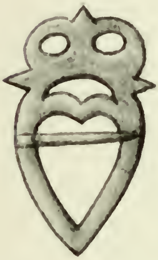
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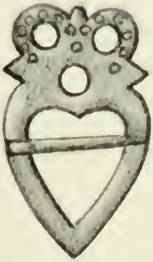
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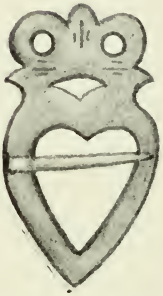
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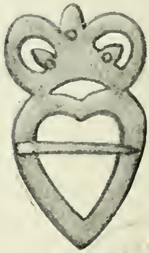
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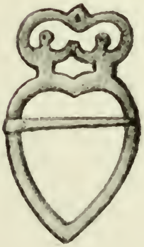
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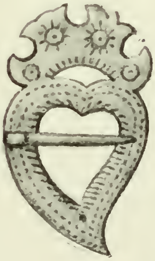
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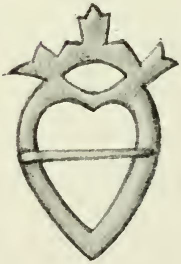
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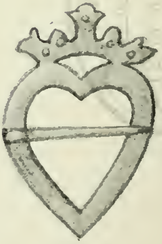
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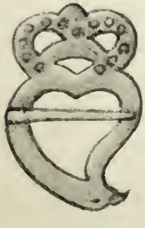
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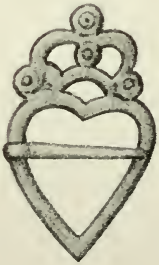
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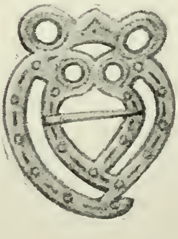
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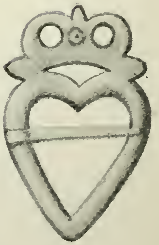
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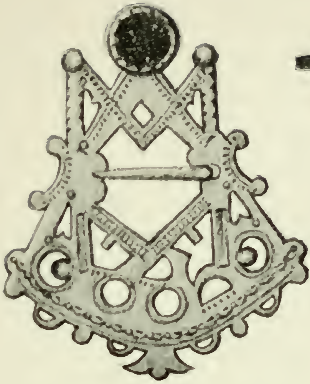
Plate 15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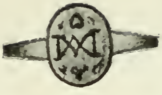
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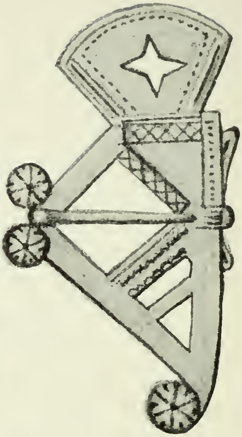
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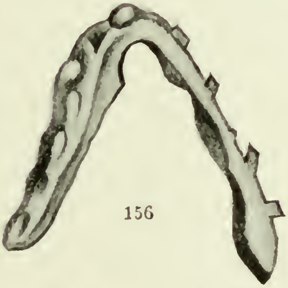
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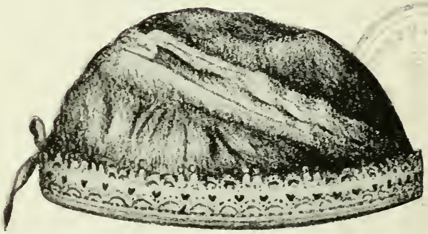
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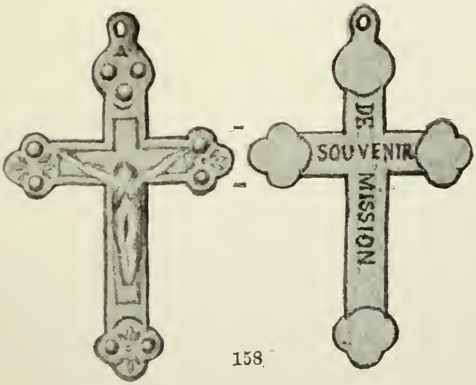

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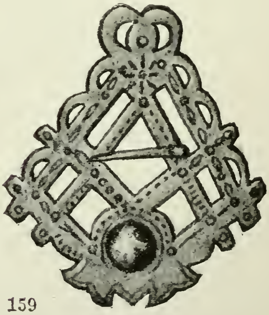
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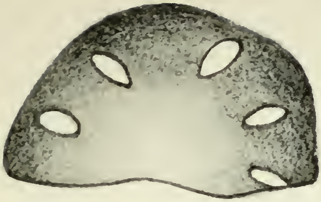
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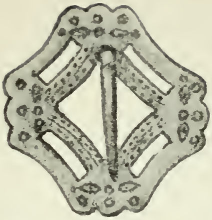
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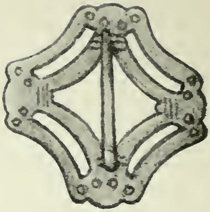
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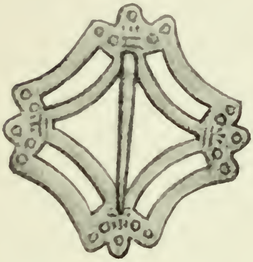
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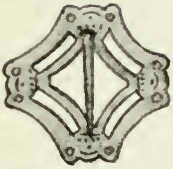
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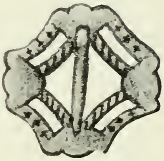
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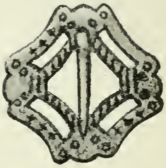
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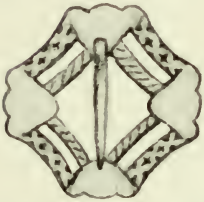
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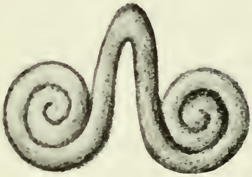
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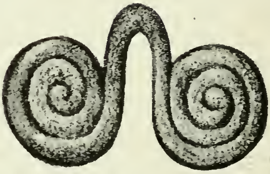
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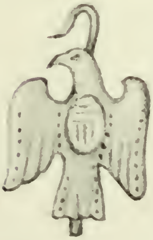
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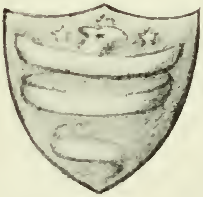
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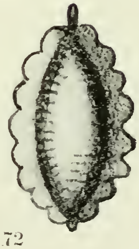
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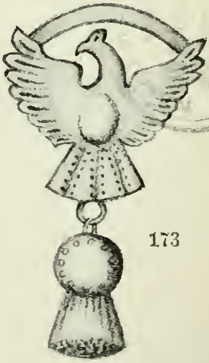
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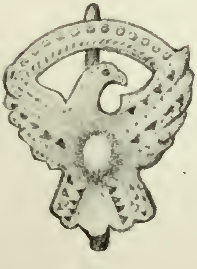
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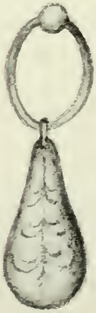
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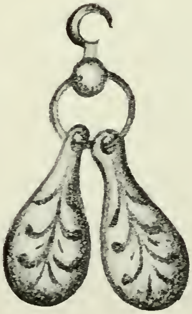
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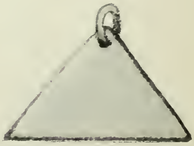
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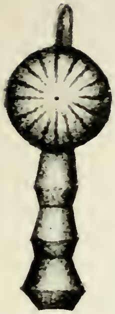
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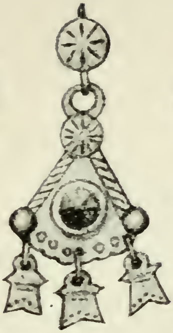
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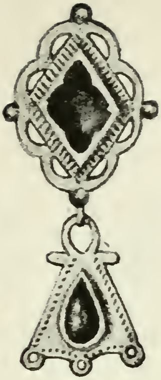
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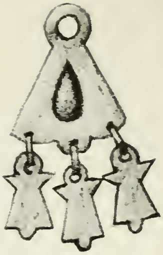
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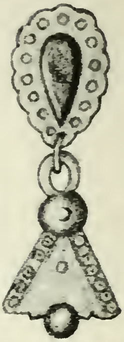
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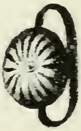
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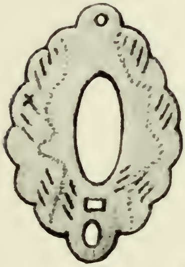
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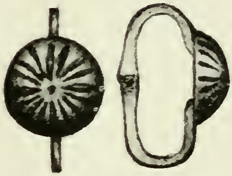
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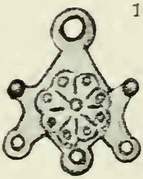
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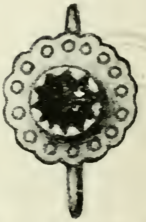
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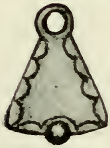
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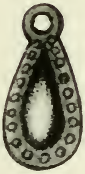
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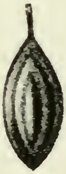
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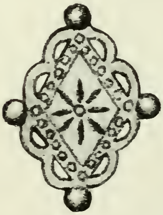
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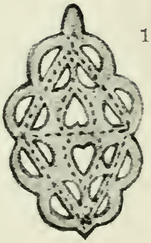
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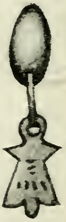
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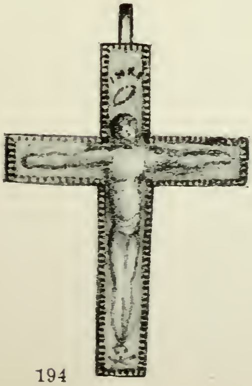
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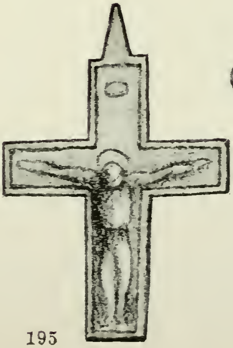
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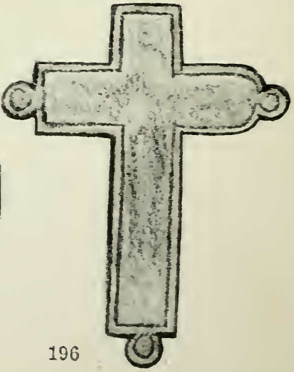
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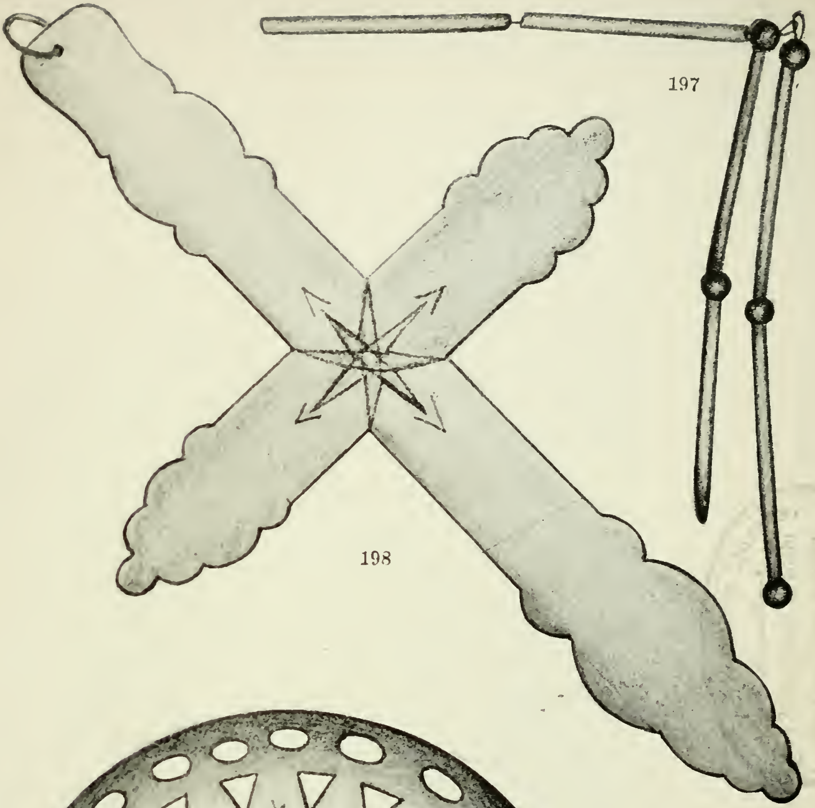

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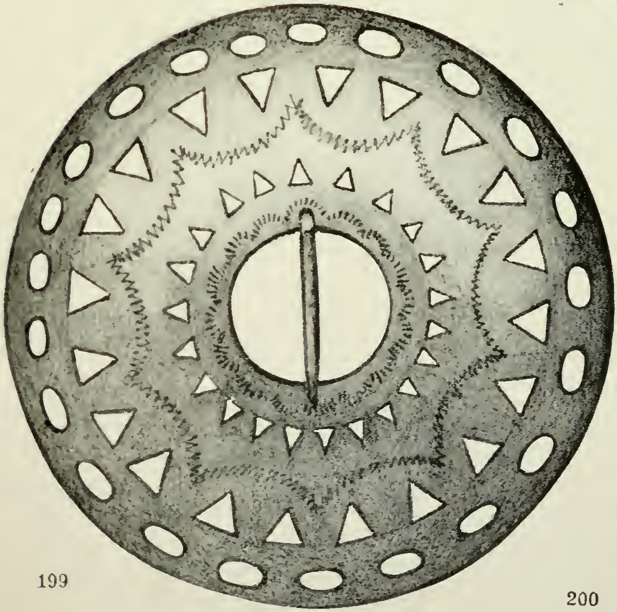

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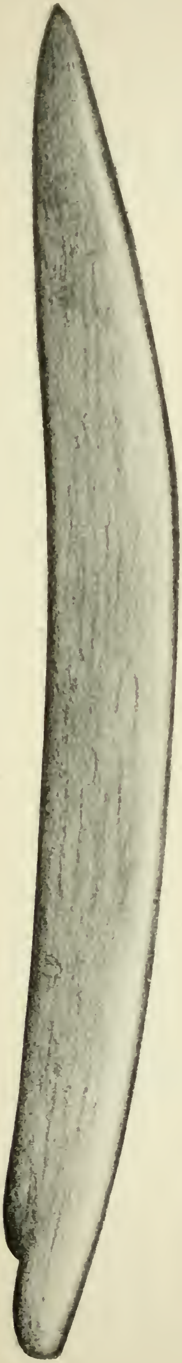

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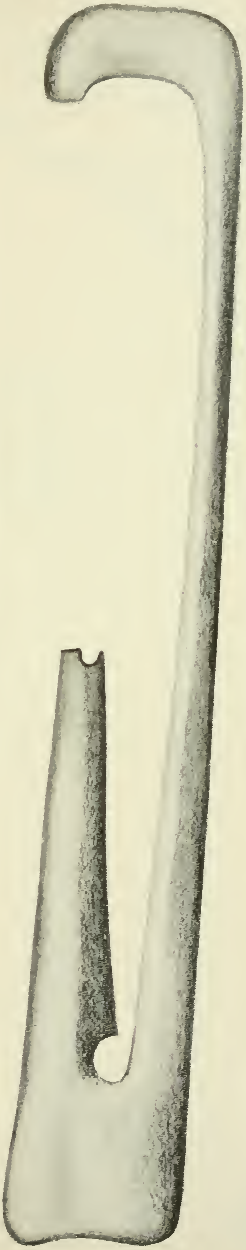

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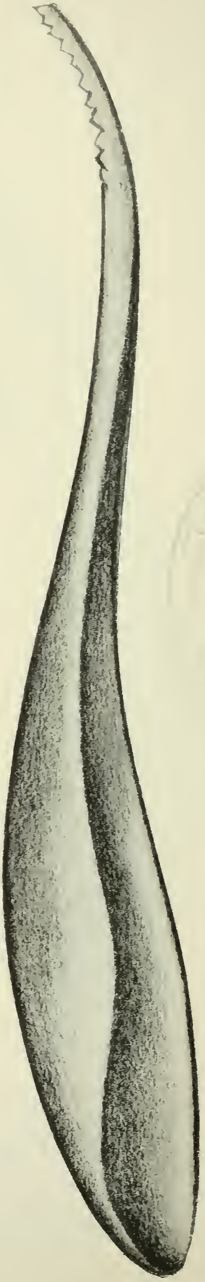

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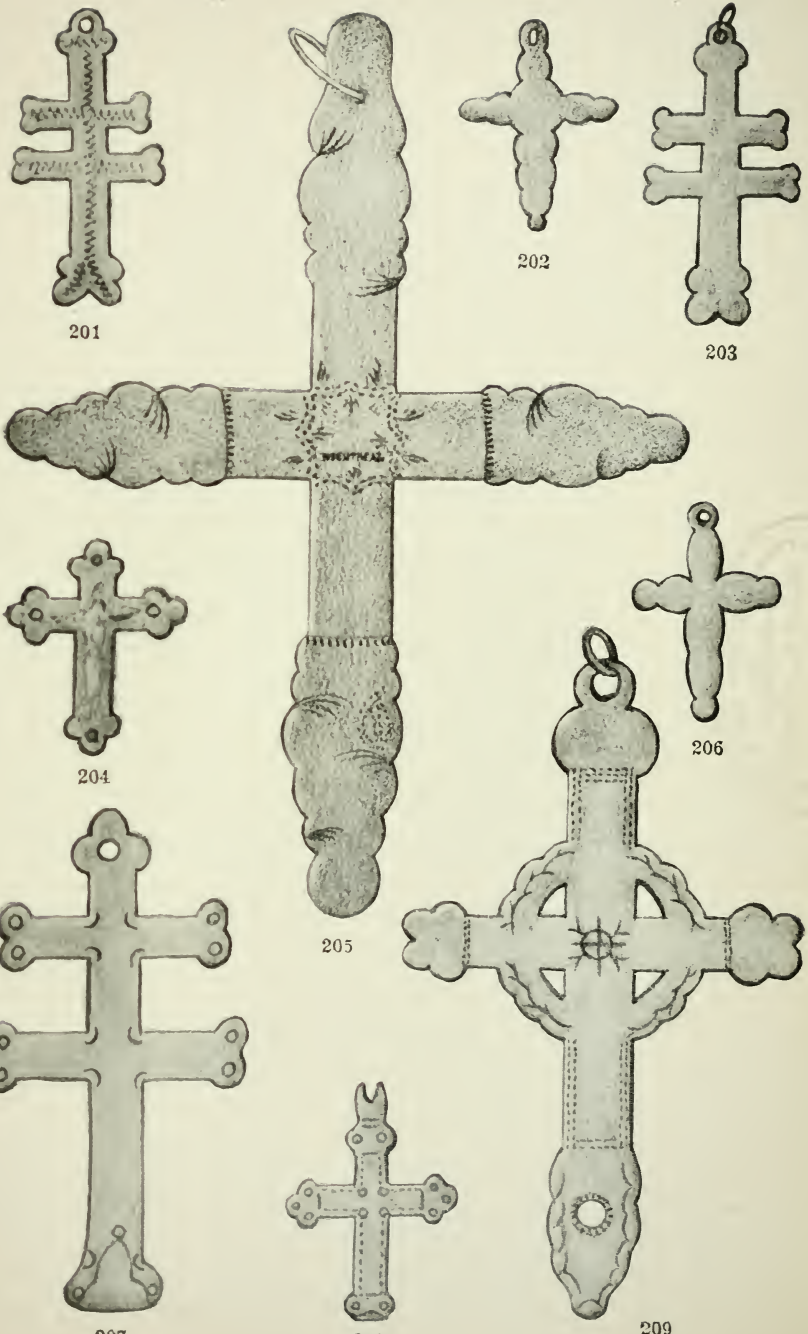
Plate 19



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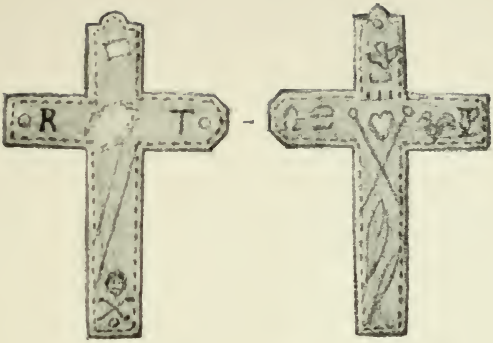

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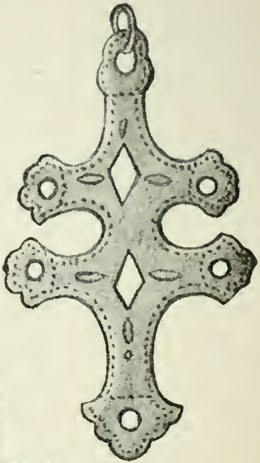

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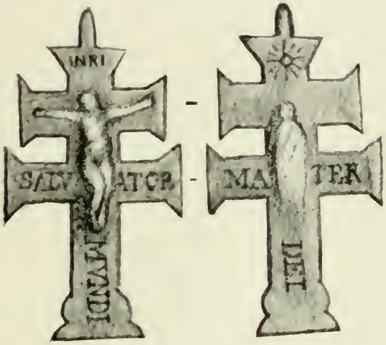

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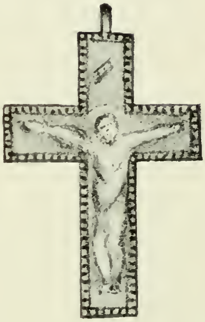

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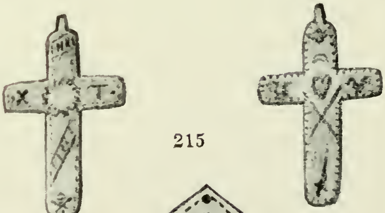

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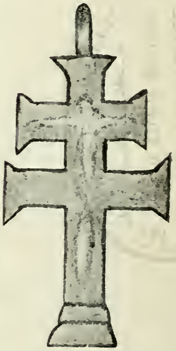

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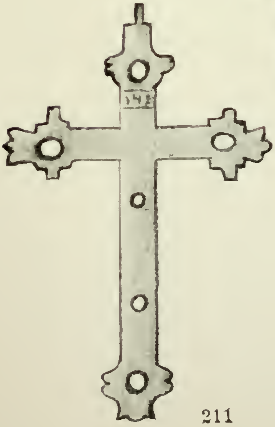

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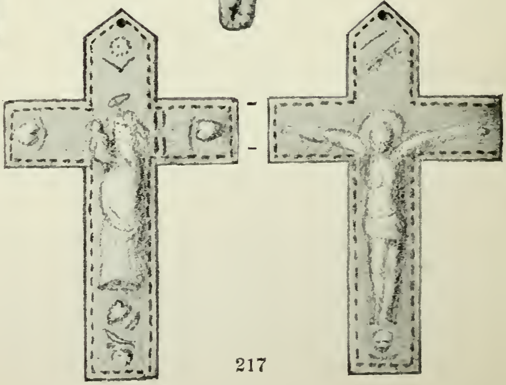

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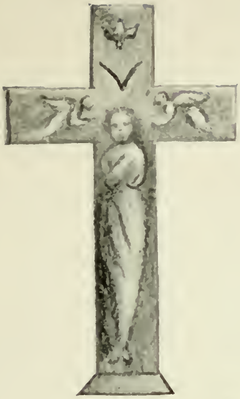
Plate 21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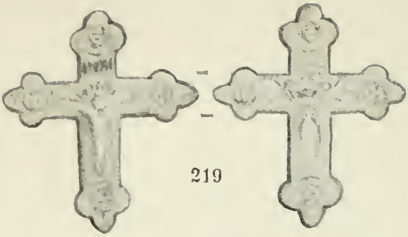
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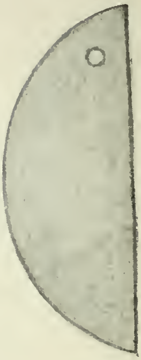
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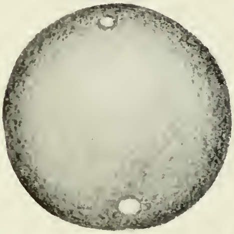
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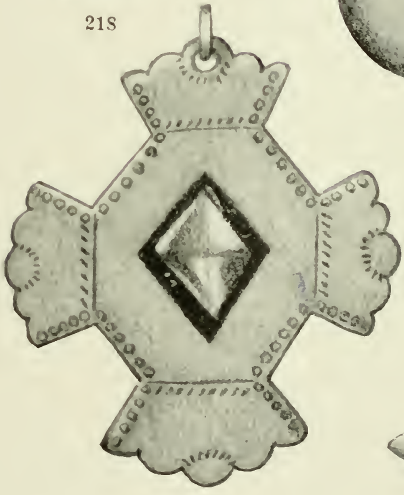
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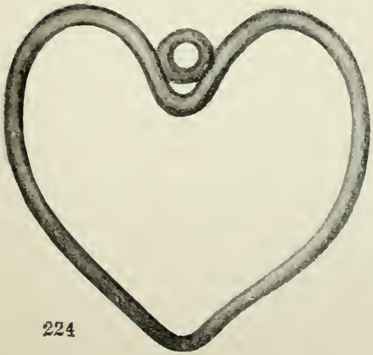
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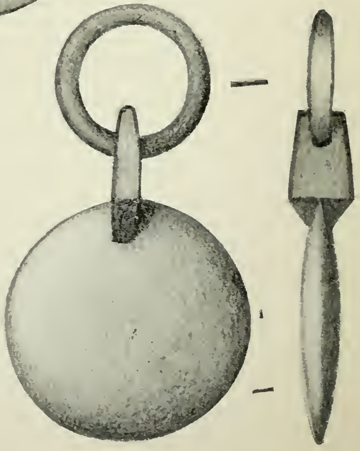
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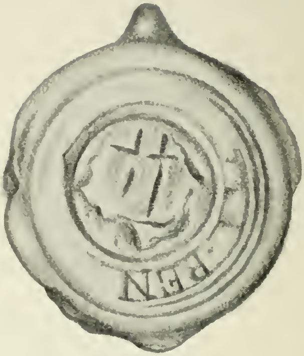

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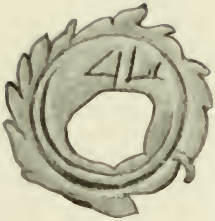

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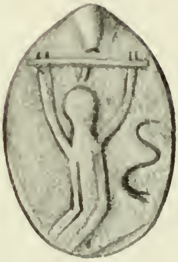

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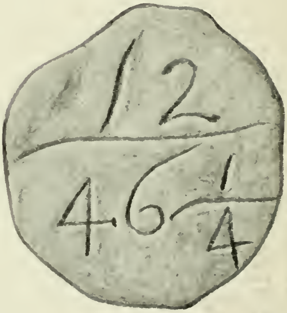

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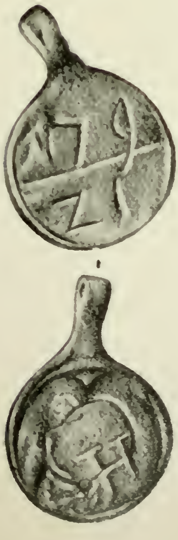

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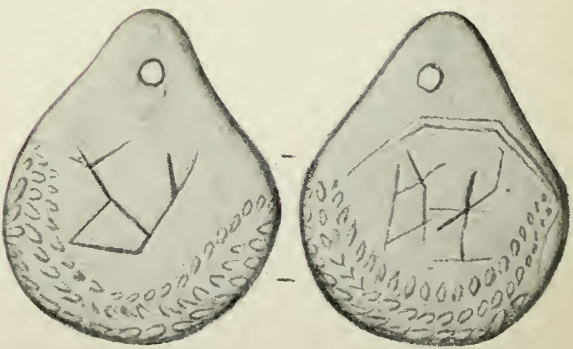

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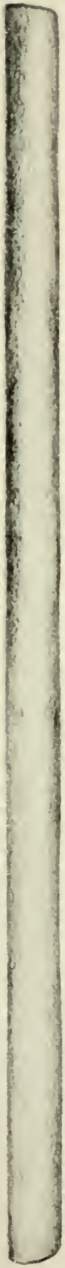
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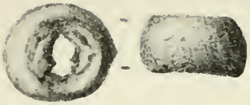
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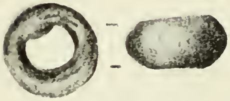
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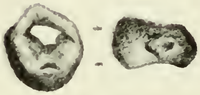
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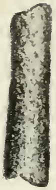
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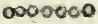
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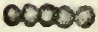
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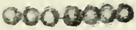
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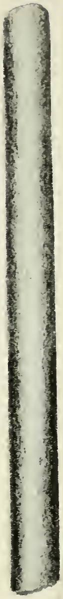
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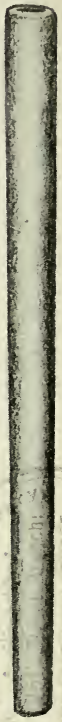
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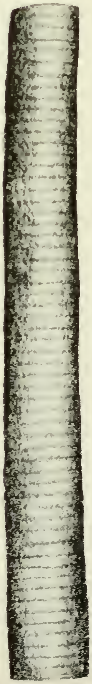
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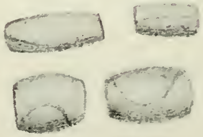
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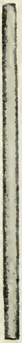
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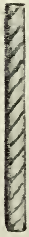
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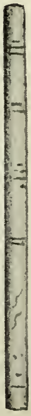
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Plate 24

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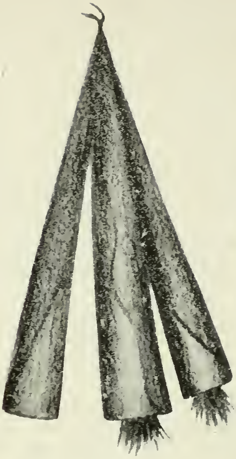
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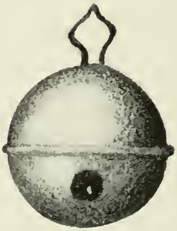
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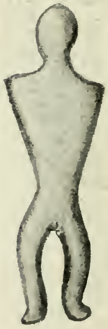
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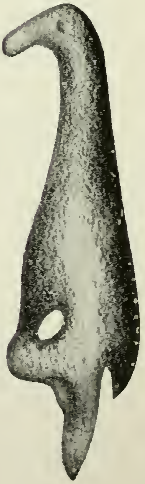
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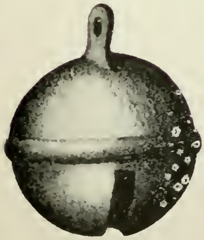
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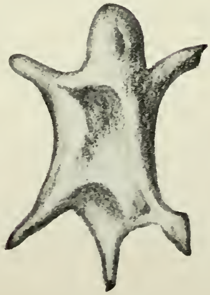
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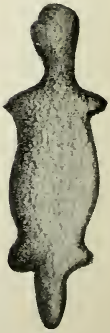
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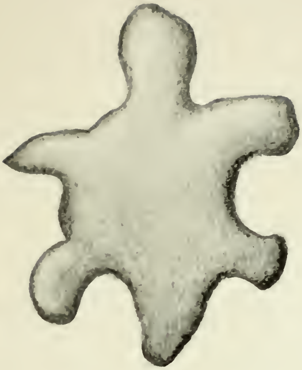

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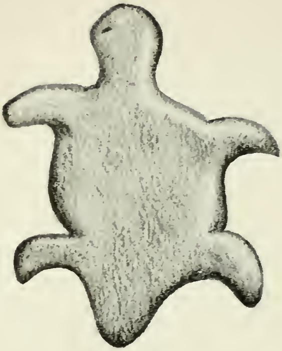

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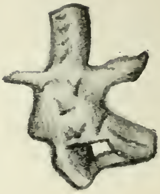

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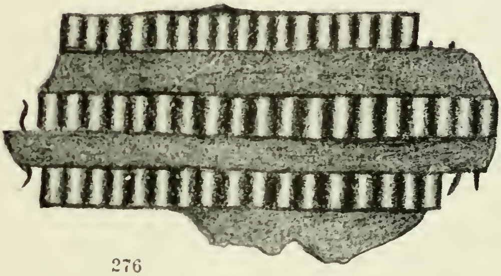

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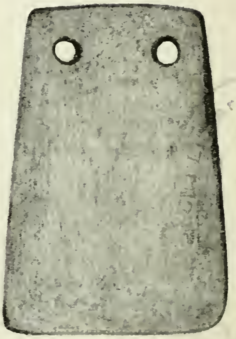

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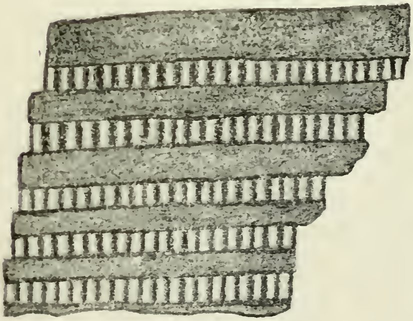

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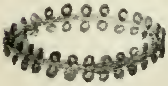

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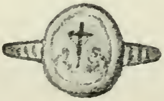

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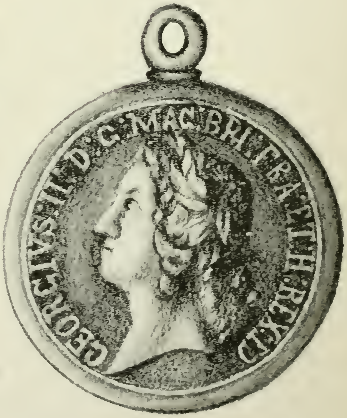

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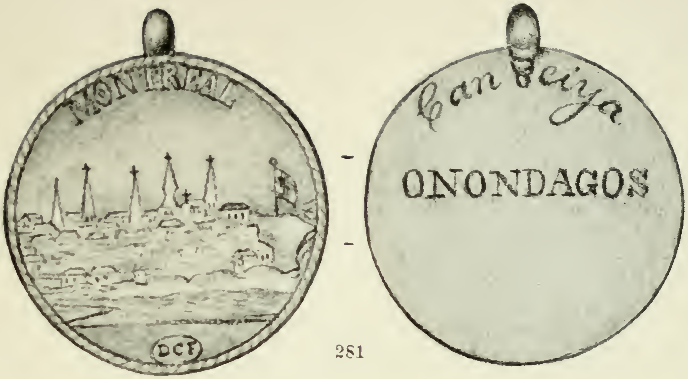

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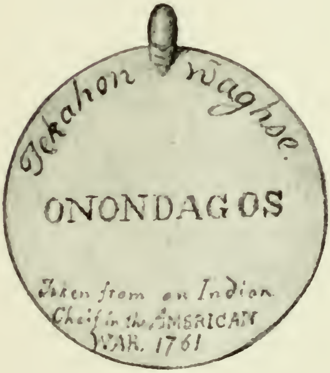

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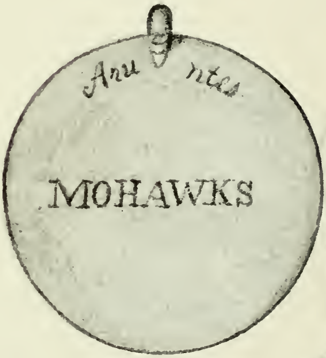

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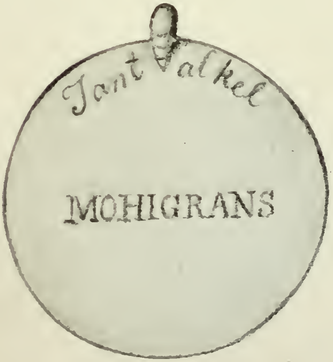

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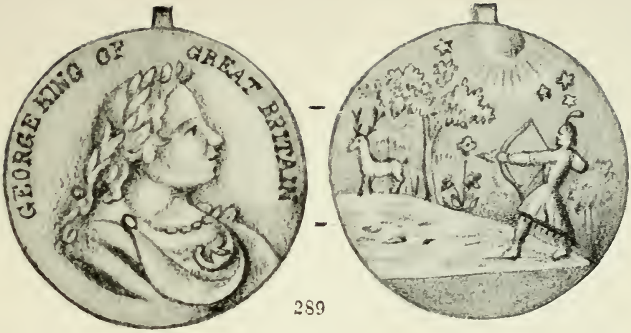
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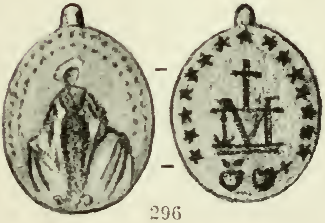

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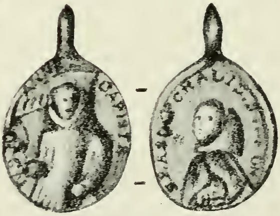

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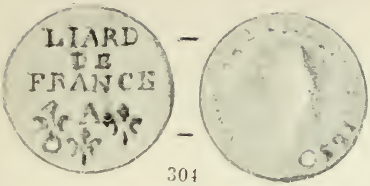

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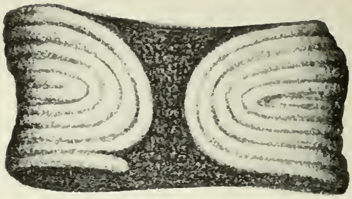

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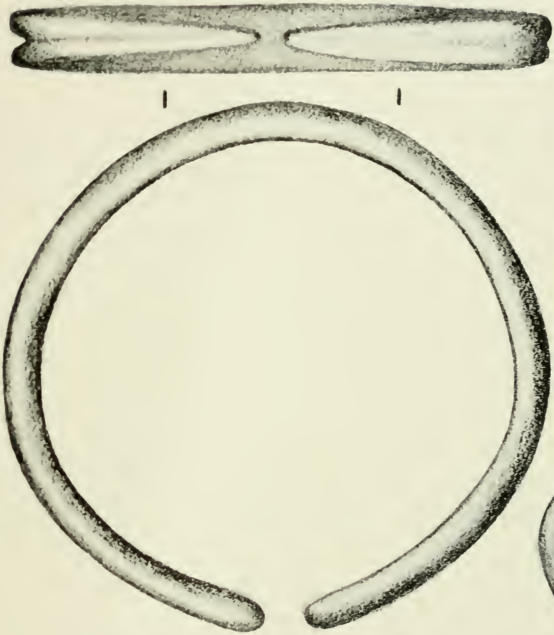

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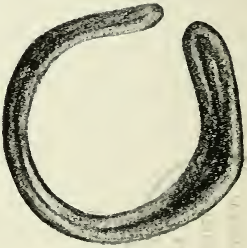

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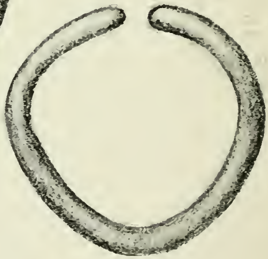

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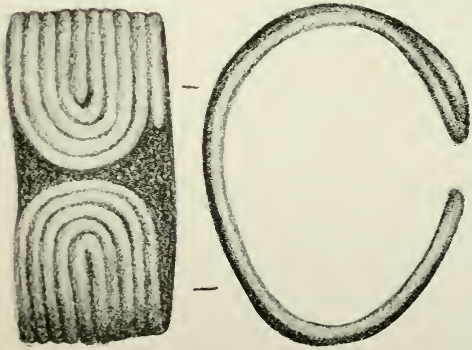

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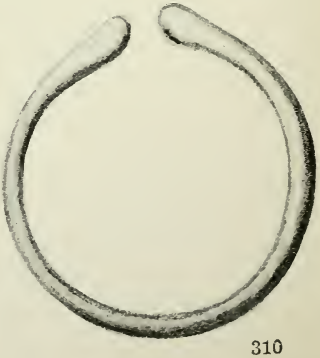

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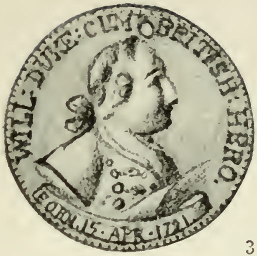
Plate 29



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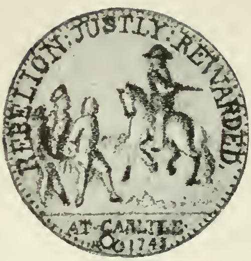

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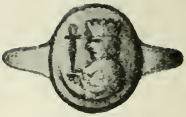
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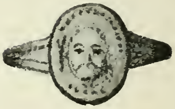
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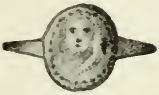
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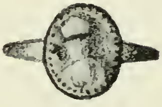
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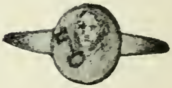
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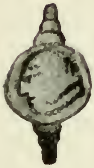
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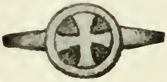
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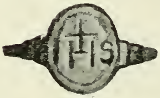
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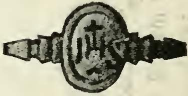
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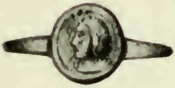
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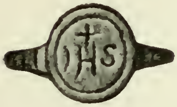
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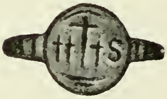
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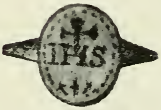
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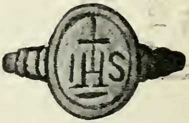
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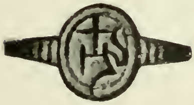
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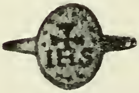
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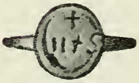
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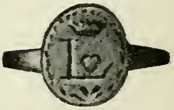
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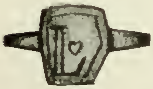
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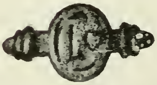
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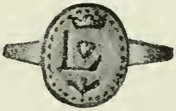
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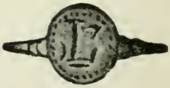
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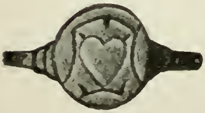
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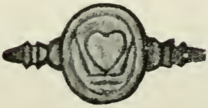
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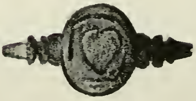
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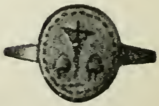
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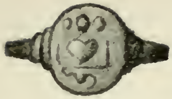
Plate 30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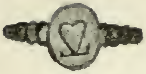
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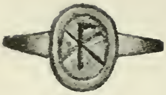
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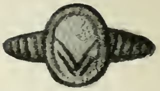
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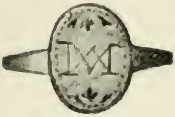
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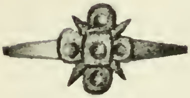
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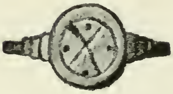
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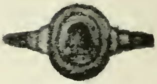
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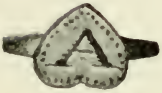
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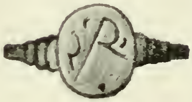
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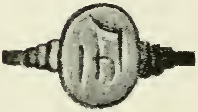
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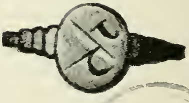
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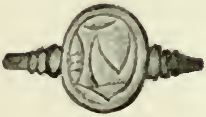
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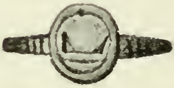
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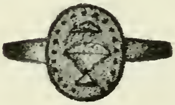
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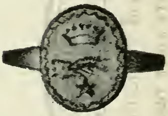
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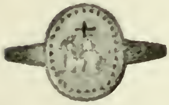
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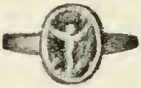
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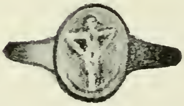
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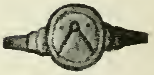
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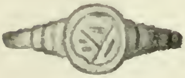
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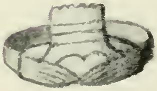
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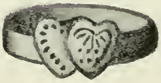
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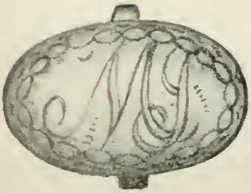
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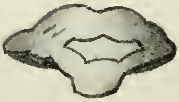
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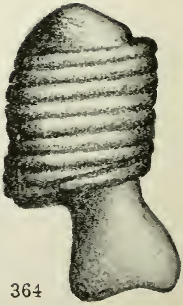
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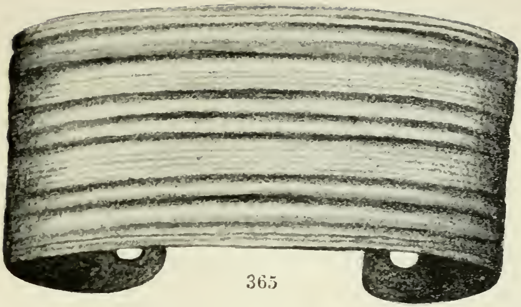

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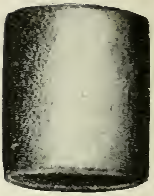

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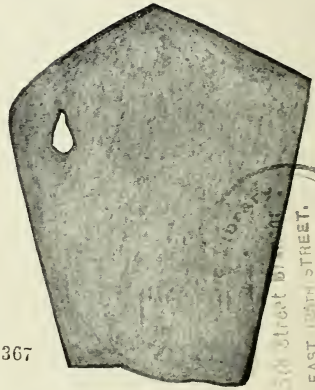

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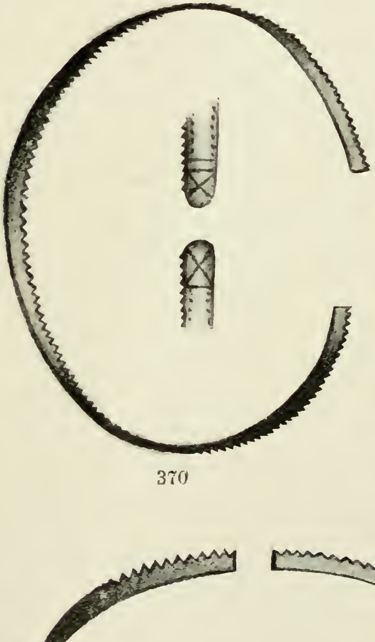

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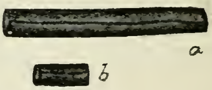

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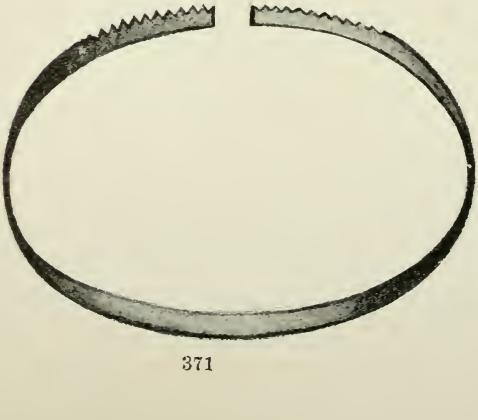

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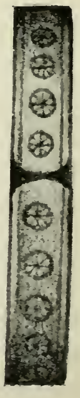

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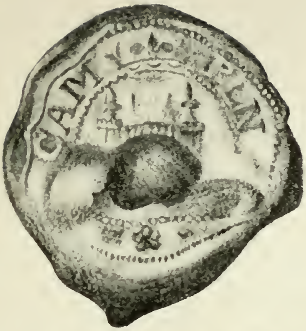

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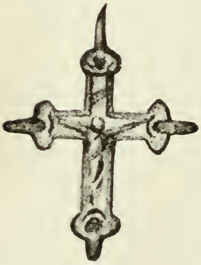

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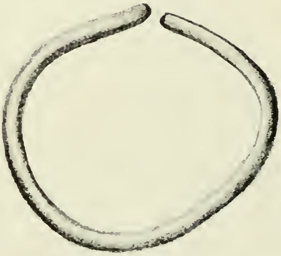

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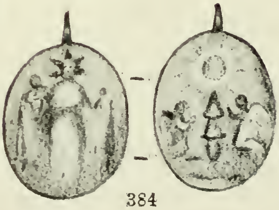

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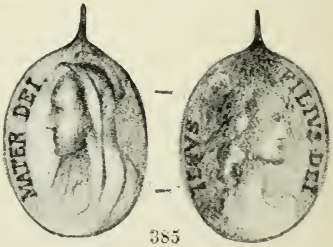

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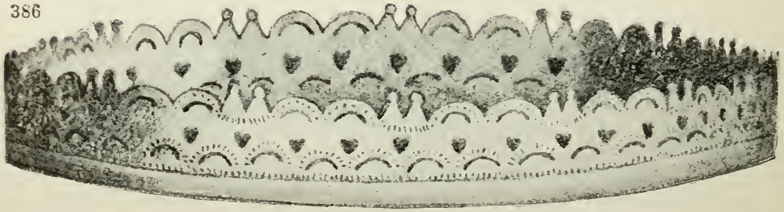
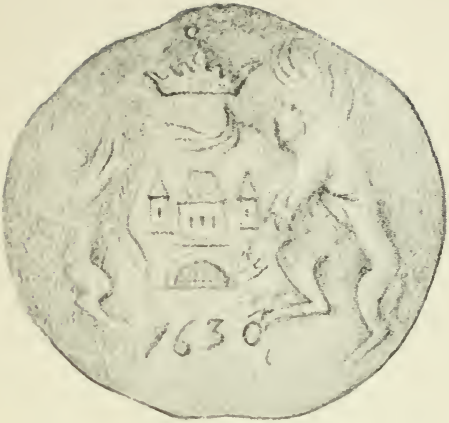


Plate 33



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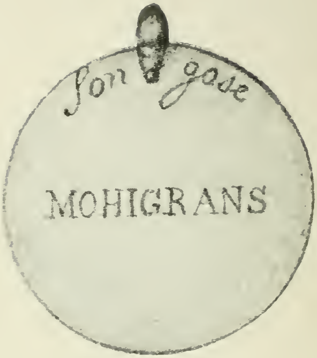

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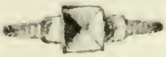

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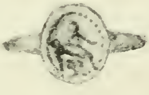

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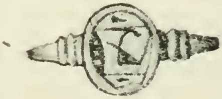

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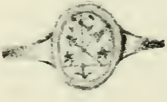

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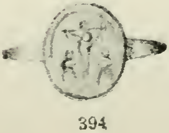

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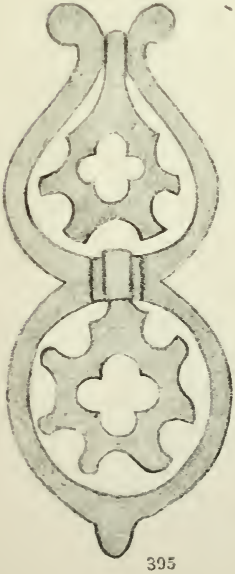

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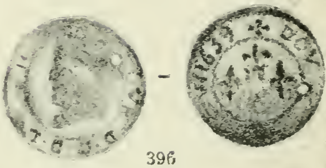

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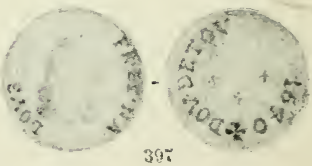

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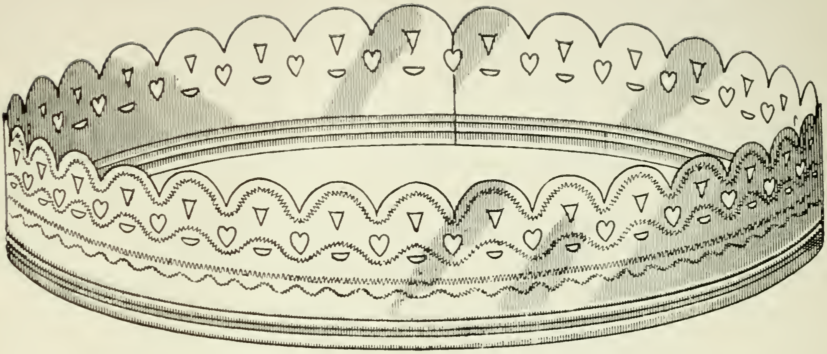

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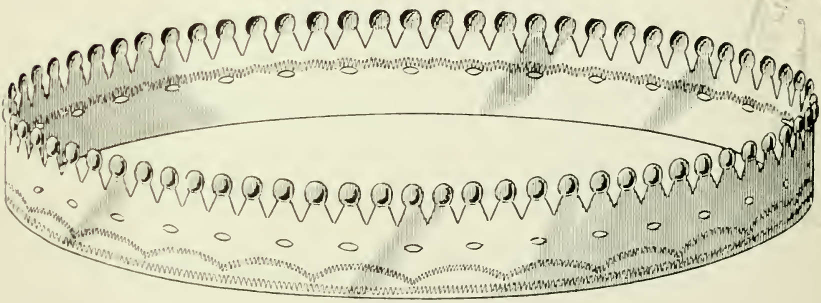

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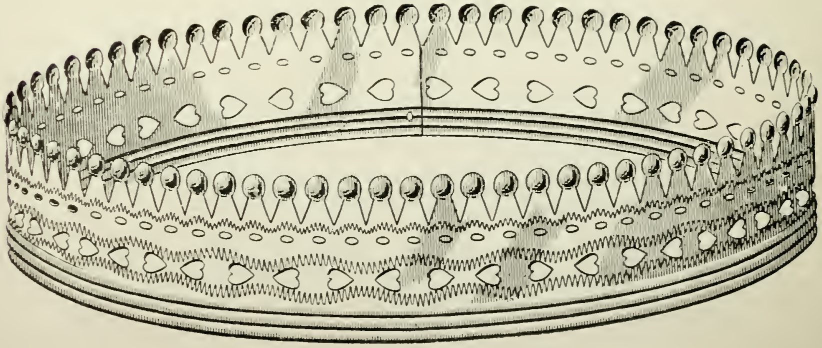

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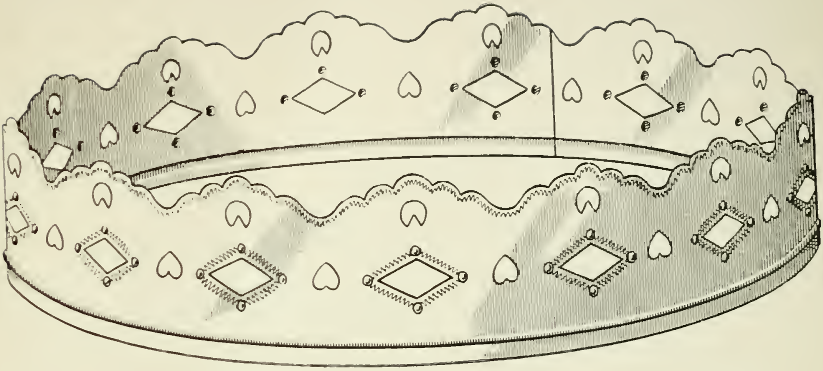

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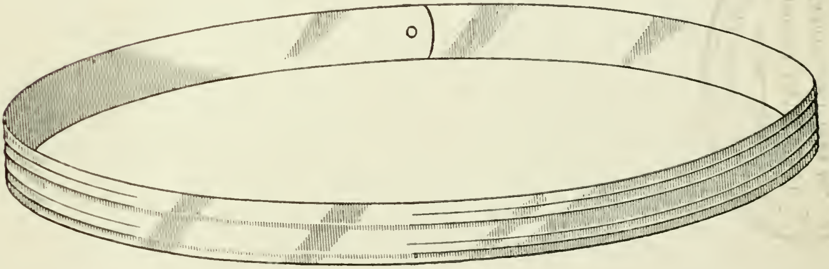

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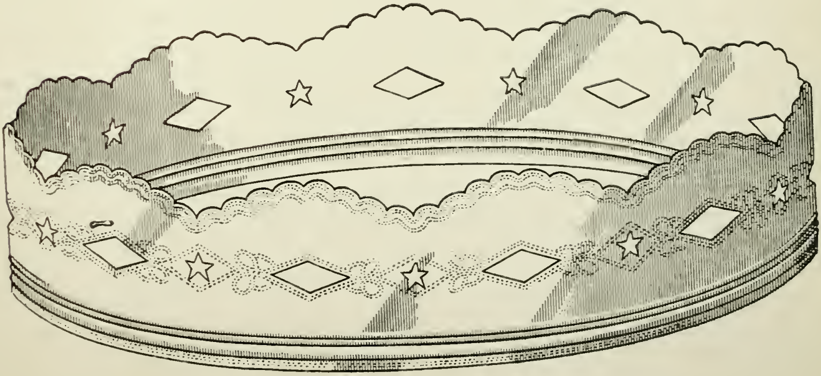

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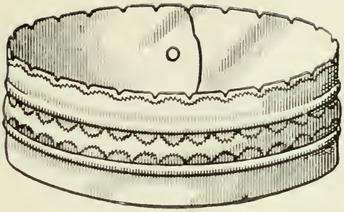
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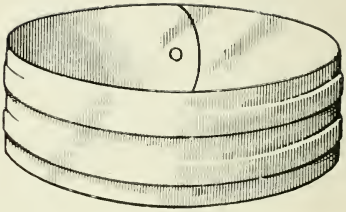
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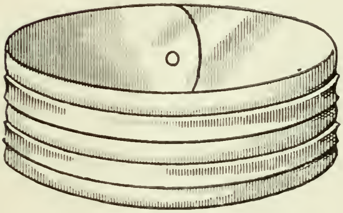
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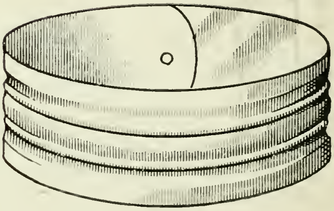
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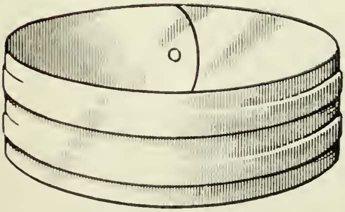
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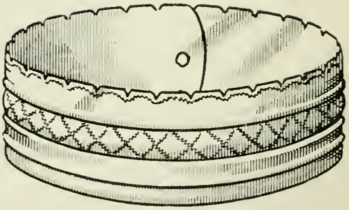
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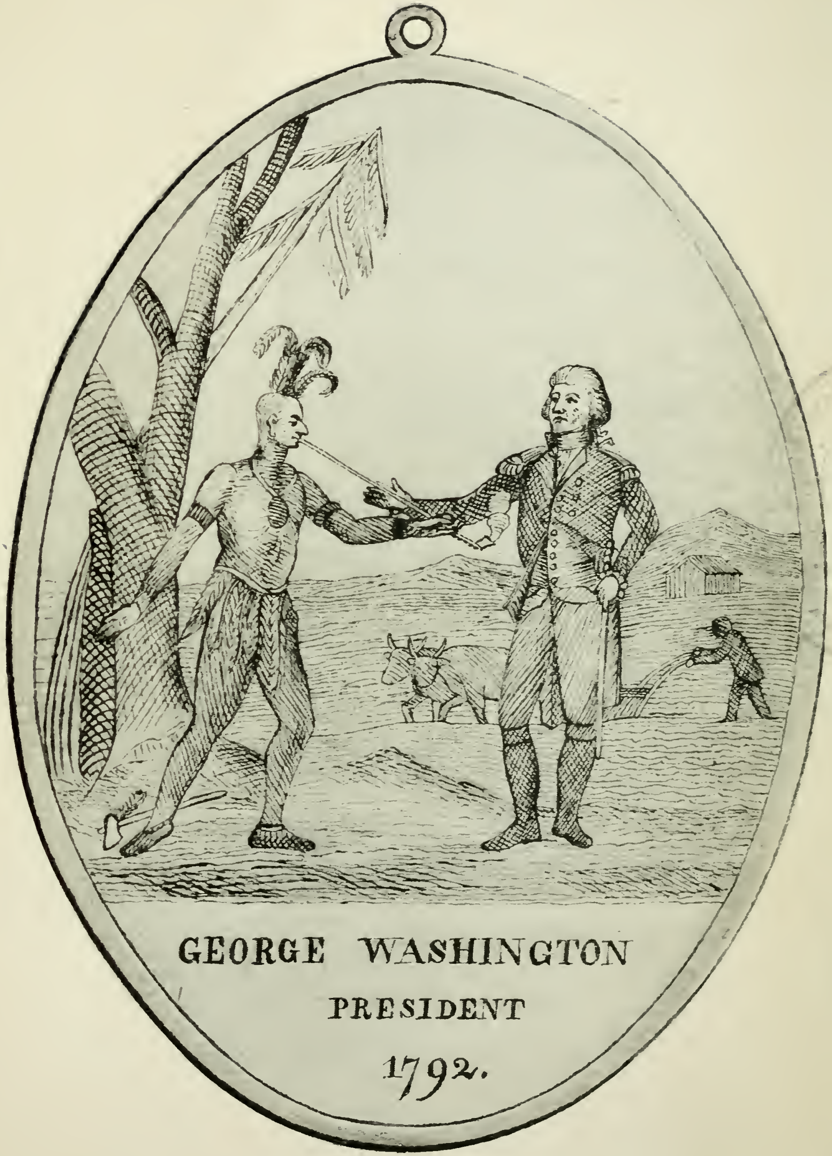

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New York State Museum

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Bulletin	*Report*	*Bulletin*	*Report*	*Bulletin*	*Report*
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16–17	50 "	26–31	53 "	37–44	" v. 3
18–19	51 "	32–34	54 "	45–48	" v. 4
				49–54	55, v. 1

The figures in parenthesis indicate the bulletin's number as a New York State Museum bulletin.

Geology. G1 (14) Kemp, J. F. Geology of Moriah and Westport Townships, Essex Co. N. Y., with notes on the iron mines. 38p. 7pl. 2 maps. Sep. 1895. *10c.*

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